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# Unlimited Labour: Further Notes

In an article published in this journal four years ago<sup>1</sup> I showed how the classical assumption, that labour is available to the capitalist sector of an economy in perfectly elastic supply, leads to different conclusions from the neo-classical assumption that the supply of labour is inelastic, and illumines several problems of economic growth which modern economics cannot solve. The following notes set out in more detail the classical position on a number of these matters, and also make some further deductions from the classical model. I return to this subject because of its practical importance. More than half the world's population (mainly in Asia and in Eastern Europe) lives in conditions which correspond to the classical and not to the neo-classical assumptions. These peoples have more to learn from the classical analysis than from anything which has been published since 1870, so it is very desirable to study classical writings and translate their findings into modern language.<sup>2</sup> Besides, it is time that the classical writers had a square deal. For the past fifty years economists have been judging them from the standpoint of neo-classical analysis, giving them marks for intelligent anticipations of the neo-classical theory of value (as if they were primarily value theorists, and as if the neo-classical assumptions applied in their day), and dismissing everything else, especially the theory of development in which they were chiefly interested.<sup>3</sup> Hence studying the classics in the context to which they belong is overdue as much in terms of justice as of utility.

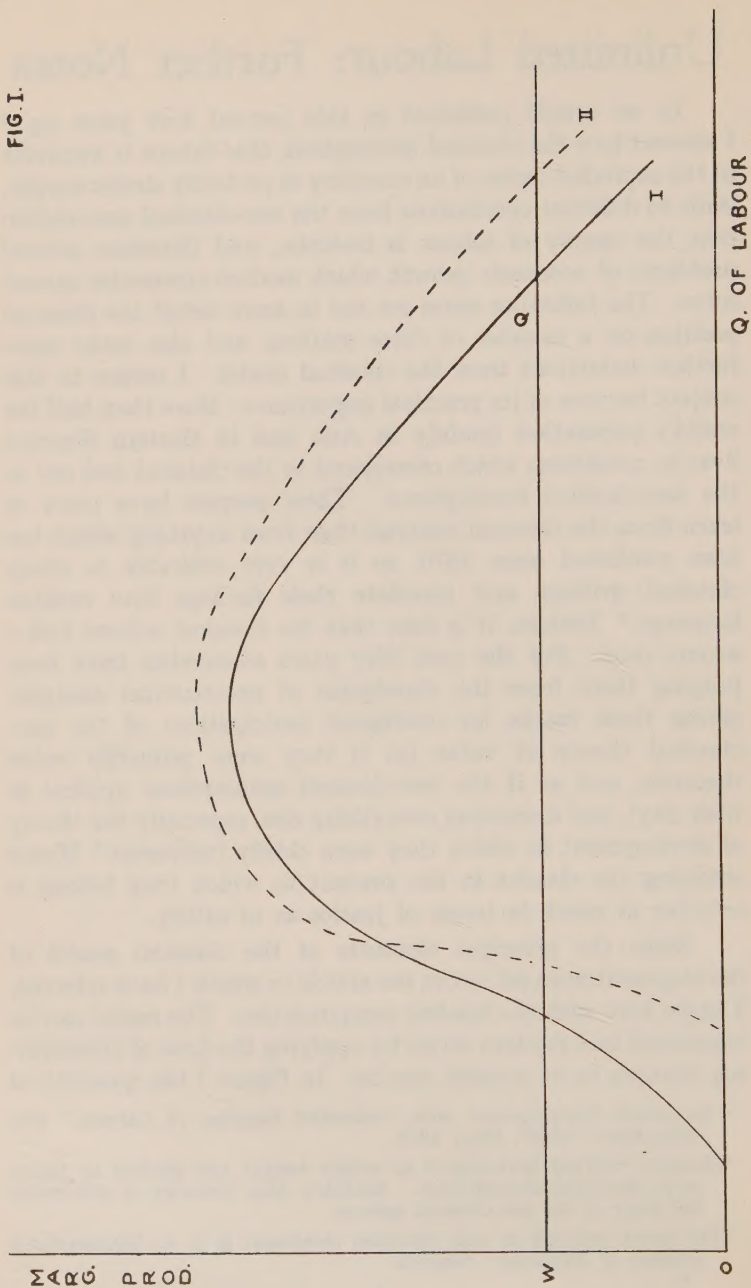
Since the principal elements of the classical model of development were set out in the article to which I have referred, I begin here with the briefest recapitulation. The model can be translated into modern terms by applying the Law of Diminishing Returns in its modern version. In Figure I the quantity of

<sup>1</sup>"Economic Development with Unlimited Supplies of Labour," *The Manchester School*, May, 1954.

<sup>2</sup>Classical political economy is as widely taught and studied in Japan as is neo-classical economics. Southern Asia, however, is still under the sway of the neo-classical system.

<sup>3</sup>The latest example of this distorted treatment is J. A. Schumpeter's *History of Economic Analysis*.

FIG. I.



labour is measured on the horizontal axis ; the marginal productivity of labour on the vertical axis. The curve *I* shows the marginal product of labour with a given quantity of capital. If the wage is *OW*, employment will be *WQ*, provided that the surplus over wages is positive (the area under curve *I* up to *Q*, minus the rectangle *OQ*). The fact that there is not enough capital to provide employment for everybody is a vital distinction between this model and neo-classical analysis.

The system is dynamic. Since some saving occurs, capital will increase. So the marginal productivity curve will move outward, taking say the position *II*, and employment will increase continuously.

My earlier article discussed in some detail the sources from which labour flows toward capitalist employment. The classical economists put population growth first, but there are many other sources, which may be listed as peasant agriculture, cottage industry, casual labour, petty trade, domestic service, and wives and daughters entering the labour market.<sup>1</sup> Population growth, it should be noted, includes immigration, which has been an important source of expansion in several countries.<sup>2</sup> Apart from population growth, the classical economists relied on a transfer of labour from "productive" to "unproductive" employment, and it is useful to begin by probing this distinction.

<sup>1</sup>Most countries in the early stages of economic development have not one economy but two—a high wage economy (mines, plantations, factories, large-scale transport, etc.) and a low earnings economy (family farms, handicraft workers, domestic servants, petty traders, casual labourers, etc.). As development occurs, labour transfers from the low earnings to the high wage economy. It is of little consequence whether persons moving out of the low earnings economy have been in "disguised unemployment," or whether their marginal product has been zero, negative, or merely small. All that the analysis requires is that the supply willing to move at the current wage rate should greatly exceed the demand.

<sup>2</sup>The model can be used for regional analysis, where one part of a country (such as a town or province) is expanding relatively to the rest. Since output is determined by technical factors only and not by competitive valuation, the analysis cannot be applied to the firm, or to any other sector of an economy to which capital is also assumed to be in perfectly elastic supply. In the same way if the value of the region's output is determined by extra-regional competition, the analysis has to be modified to take account of this. See Part II of my earlier article (*loc. cit.*).



# I. PRODUCTIVE AND UNPRODUCTIVE LABOUR.

As Adam Smith set out the distinction, there are two elements to productive labour. First, its output consists of wage goods, and excludes services.<sup>1</sup> Secondly, productive labour produces a surplus over wages, and has therefore a larger average product than unproductive labour. The distinction was made and used only for the purpose of analysing capital accumulation.<sup>2</sup> Wage goods were produced by a roundabout process, involving time, so the number of productive labourers could not be expanded without saving.<sup>3</sup> Given saving, some labour could be transferred from service trades to producing more wage goods. This increase in the output of wage goods would enable the society to carry a larger population. The increase in the surplus, resulting from the increase in the number of productive workers, would also make possible still more saving. So there could be yet more expansion, in a continuing chain.

We must explore both the importance attached to wage goods, and also the notion of the surplus.

## (a) *The Importance of Wage Goods.*

The classical economists approached the analysis of accumulation *via* the consumption of wage goods. They divided the consumers into three classes: (1) capitalists and landlords, (2) producers of services and luxuries, and

<sup>1</sup>Strictly, Smith's distinction is between commodities and services.

But our modern distinction between wage goods and other output seems really to be what he was striving after, and fits his analysis best.

<sup>2</sup>Neo-classical economists have attacked the distinction from the standpoint of value theory, but since it was not intended for that context, the attack is irrelevant.

<sup>3</sup>We have difficulty in following the classical analysis of capital formation because they concentrated on the need to finance the period between ploughing and harvesting, which to us seems a relatively simple problem. We can understand them better by presuming this period to be lengthened from months to several years, whereupon reminiscences of Bohm-Bawerk make us feel more at home. Another difficulty is that, whereas the classics wrote in terms of consumer goods being produced by capitalistic processes, we now most often distinguish a sector producing consumer goods, and a sector producing capital goods. This way of thinking originated with Marx, who, following Ricardo's insight into the problem presented by machinery, devoted much attention to distinguishing sharply between fixed and circulating capital.

(3) producers of wage goods. In the wider sense the consumption of the producers of non-wage goods was part of the consumption of capitalists and landlords, since they regarded class (2) as being maintained by class (1) for its amusement, etc. out of the surplus extracted from class (3). Thus, when they spoke of the capitalists saving they sometimes meant reducing their personal consumption of wage goods, but more often they meant merely having fewer servants, and so reducing the numbers maintained in class (2).

For our purposes it is convenient to add another class, namely persons engaged in making capital goods. We then get four classes of consumers of wage goods

- (1) capitalists and landlords
- (2) producers of services and luxuries
- (3) producers of capital goods
- (4) producers of wage goods.

The first three classes are maintained out of the surplus produced by the fourth above its own consumption.

The problem is to increase the number in class (3), the producers of capital goods. This can be done in one of two ways. Either, consumption by one of the other three classes must fall. Or else the output of wage goods must increase, and the increase in class (3) be financed out of this increase in wage goods output.

These are relatively trivial propositions, yet they have been neglected recently by policy makers. The classical approach to capital formation via the consumption of wage goods does have the merit of reducing the problem to its simplest terms.

The temptation to neglect the first proposition—that if the output of wage goods is given, capital formation cannot be increased without reducing somebody's consumption—is very strong in those over-populated countries where there is surplus labour on the family farms (in the sense that if some labour left the farm to work on investment projects the output of farm products would not be reduced significantly). The transfer can indeed be achieved without disturbing consumption if the farmers are going to work on Community Development projects without pay; any person can make more capital goods for himself without consuming more wage goods, if he so desires.



But when surplus workers have to be paid to work on investment projects, the demand for wage goods is increased, partly because the workers will not accept the work unless they are paid more than they would get if they stayed on the farm, and partly because the family left at home consumes more per head.

Accordingly, even when there is surplus labour, employing more people on investment projects means cutting consumption somewhere, if the output of wage goods is fixed. The employer (call him for convenience the government, since in these cases it is most often the government) has to find a fund of "saving" from somewhere to finance the additional capital formation.

First, let us note that if the fund is found by taxing capitalists or landlords it will probably result not in reducing their personal consumption of wage goods, but in reducing their employment of other workers, whether workers in class (2) services and luxuries, or workers in class (3) engaged in capital formation. In either case greater employment by the government is offset by equally smaller employment by capitalists and landlords. Ultimately, however, employment increases in the former case, since the increase in the amount of fixed capital in existence will permit larger employment and a greater national income.

Secondly, let us ask how large the fund of saving needs to be. This depends partly on the extent to which consumption on the family farm falls as members move off the farm. Suppose that to employ a man requires 100 units of wage goods, and that his leaving the farm releases 30 units. Then, if the government can get hold of the 30 so released, it need find only 70 elsewhere. If it actually finds 100 elsewhere, then the total employment resulting is increased to the equivalent of

$$100 + 30 + 9 + 2.7 + 0.81 + \dots = 142.9$$

This is the concept which Vakil and Brahmanand have called "the consumption multiplier."<sup>1</sup> The concept has theoretical validity, but one may doubt its practical utility. Since it is

<sup>1</sup>C. N. Vakil and P. R. Brahmanand, *Planning for an Expanding Economy*, Bombay, 1956. The authors have written a thoughtful treatise, which essentially seeks to rehabilitate much of the classical system for application to countries with surplus labour. The concept referred to here, however, was originated by Nurkse (*op. cit.*), who decided that it was not worth naming.

unlikely that the government could get hold of the 30 units presumed to be released, the authors are right to formulate the proposition in terms of a multiplier rather than in terms of a reduction in the sum the government must find elsewhere. On the other hand, the assumption that 30 units will be released, and be used by the farm family in ways which increase off-farm employment, seems equally unlikely. For, in practice the departure of one member of the family does not in these circumstances of extreme poverty reduce the consumption of wage goods on the farm. Not only do the others consume what he has left behind, but they usually also expect him to send something back out of his wage, so that they may consume marginally even more than he was consuming before.<sup>1</sup>

So much for capital formation, given the output of wage goods. The other proposition—that if it is difficult to decrease the consumption of any class, an increase in capital formation requires an increase in wage goods output—has also been neglected. Thus, economists in the U.S.S.R., China, Eastern Europe, India and elsewhere have debated the question: "Should we concentrate on producing capital goods first and consumer goods second, or should the order be reversed?" Our scheme enables us to answer this question at once. We can only put capital goods first in so far as somebody's consumption can be reduced. Beyond this point, capital formation can be increased only by increasing simultaneously the output of wage goods. Hence in a poor country, where it is difficult to reduce consumption, the necessary condition for increasing capital formation is to increase the output of wage goods so as to provide an extra surplus which can be impounded for capital formation.<sup>2</sup> Is it not odd that it is the Marxist policy

<sup>1</sup>However the multiplier does not in any case fall below unity, since remittances reduce the worker's own consumption.

<sup>2</sup>Vakil and Brahmanand (*loc. cit.*) use this point for a wholesale condemnation of the trend of Indian planning. Their strictures seem greatly exaggerated. The Indian planners have shown their awareness of the point by their great stress on raising agricultural productivity, and by their plans to increase the output of cottage industries. Whether the supply of consumer goods will meet the demand is doubtful, but if it does not, the reason will be the over-optimism of the planners, rather than their failure to recognize the case for expanding the output of wage-goods. The authors also advance an argument for producing the required wage-goods with machines, instead of with surplus labour, but this is a separate issue, which we take up in the part of this paper which deals with technological unemployment.

makers, presumably bred in the classical tradition, who have most often neglected this proposition?

(b) *The Superior Productivity of the Capitalist Sector*

The second element of the distinction between productive and unproductive labour is that the former produces a surplus, so that a transfer of workers from the latter to the former raises the national income, increases the total surplus over wages, and so makes possible further expansion. Adam Smith tied this to the distinction between wage goods and other output, but the tie is not important. Thus Malthus explained that, from the angle of the surplus, whether the workers make commodities is unimportant; and he thought that the terminology could be improved:

"If we do not confine wealth to tangible and material objects, we might call all labour productive, but productive in different degrees; and the only change that would be required in Adam Smith's work, on account of this mode of considering the subject, would be, the substitution of the terms more productive and less productive, for those of productive and unproductive.

All labour, for instance, might be stated to be productive of value to the amount of the value paid for it, and in proportion to the degree in which the produce of the different kinds of labour, when sold at the price of free competition, exceeds in value the price of the labour employed upon them.<sup>1</sup>"

Here the distinction turns upon the surplus which a labourer produces above his own wages. This surplus is profit and rent; it accrues to capitalists and landlords because the labourer works with means of production which do not belong to him, to produce a commodity (or service) which is sold for a profit. This in turn gives us the definition of the capitalist sector of an economy, as used in this model: the capitalist sector is that sector of the economy where labour is employed for wages for profit-making purposes. Labour employed for wages with no intention of resale (e.g., domestic servants in the home, as distinct from the services of office cleaners) is excluded, as is all labour which is not employed for wages, whether such labour works with capital or not (e.g., peasant agriculture). So the non-capitalist sector includes both some employees and also the self-employed.

<sup>1</sup>T. R. Malthus, *Principles of Political Economy*, page 38.



The average product of a worker in the capitalist sector exceeds that of a worker outside this sector because it reproduces wages *plus a surplus*. This idea is found in all the classical writers. The surplus exists because the labourer in this sector is working with capital ; or if the self-employed sector is also using capital, the surplus exists because the capitalist sector uses even more capital per head.<sup>1</sup> Productivity must be higher in the capitalist sector because the employment will not be offered unless there is a surplus over wages, and will not be accepted unless wages are at least as high as the average product of the self-employed sector, which is what the worker could otherwise earn.<sup>2</sup>

Thus, this aspect of the distinction between productive and unproductive workers can be restated as follows, in modern language : In the early stages of economic development there is not enough capital to provide employment for everybody in the capitalist sector. Even if marginal products were the same,<sup>3</sup> the average product of labour would still be higher in the capitalist sector than outside. Capital accumulation makes it possible to increase the ratio of workers inside the capitalist sector to workers outside, and so raises national income.

In this model the dynamic force is capitalist accumulation, resulting in the expansion of capitalist employment. This is not the only possible theoretical model of growth. One could have a model in which the dynamic force was located in the self-employed sector. For example, growth could be due to the expansion of peasant agriculture. Peasant agriculture may

<sup>1</sup>If some of the self-employed hire capital, paying interest on it, they are really within the capitalist sector. See my earlier article, *loc. cit.*, pp. 146-7.

<sup>2</sup>Sevants in the home may also be using capital, e.g., vacuum cleaners, but the psychic surplus which their employment yields to their employers (and which alone justifies their employment) does not count in this context, since it is not saleable and usable to provide employment for somebody else, as is the surplus which accrues to a cleaning agency which hires out the services of cleaners. The national income statisticians also ignore psychic surpluses.

<sup>3</sup>In perfect competition the marginal product of workers inside and outside the capitalist sector would be the same. In my earlier article (*loc. cit.*), I have explained why this is not so in practice. Because a difference exists, a transfer of workers into the capitalist sector would increase the national income even if there were no increase of capital.

become more productive for various reasons. New crops, improved seeds, new markets, roads, water supplies, etc. make peasants richer. So, in an economy which had abundant land but few capitalists, peasant agriculture might be expanding more rapidly than capitalist employment. In practice this is not very likely. If the peasants are growing rich they will demand increasing supplies of non-agricultural goods and services of the kind which are most efficiently produced on a capitalist basis, whether as aids to their production (e.g., transport facilities), or else for personal consumption. Hence the very prosperity of peasant agriculture will cause the capitalist sector to expand.<sup>1</sup> Historically, capitalist employment has everywhere expanded relatively to peasant agriculture in developing economies, and this relative expansion, as we have seen, must itself be raising the national income, since if the capitalist sector is expanding, productivity must be higher inside the capitalist sector than outside it.

Accordingly, however productive and dynamic the self-employed sector of the economy may be, the expansion of the capitalist sector relatively to the rest of the economy is an important part of the process of economic growth. The fact that this model concentrates on analysing capitalist expansion should not be taken as implying lack of interest in how peasants can be enriched.<sup>2</sup>

## II. TECHNOLOGICAL UNEMPLOYMENT.

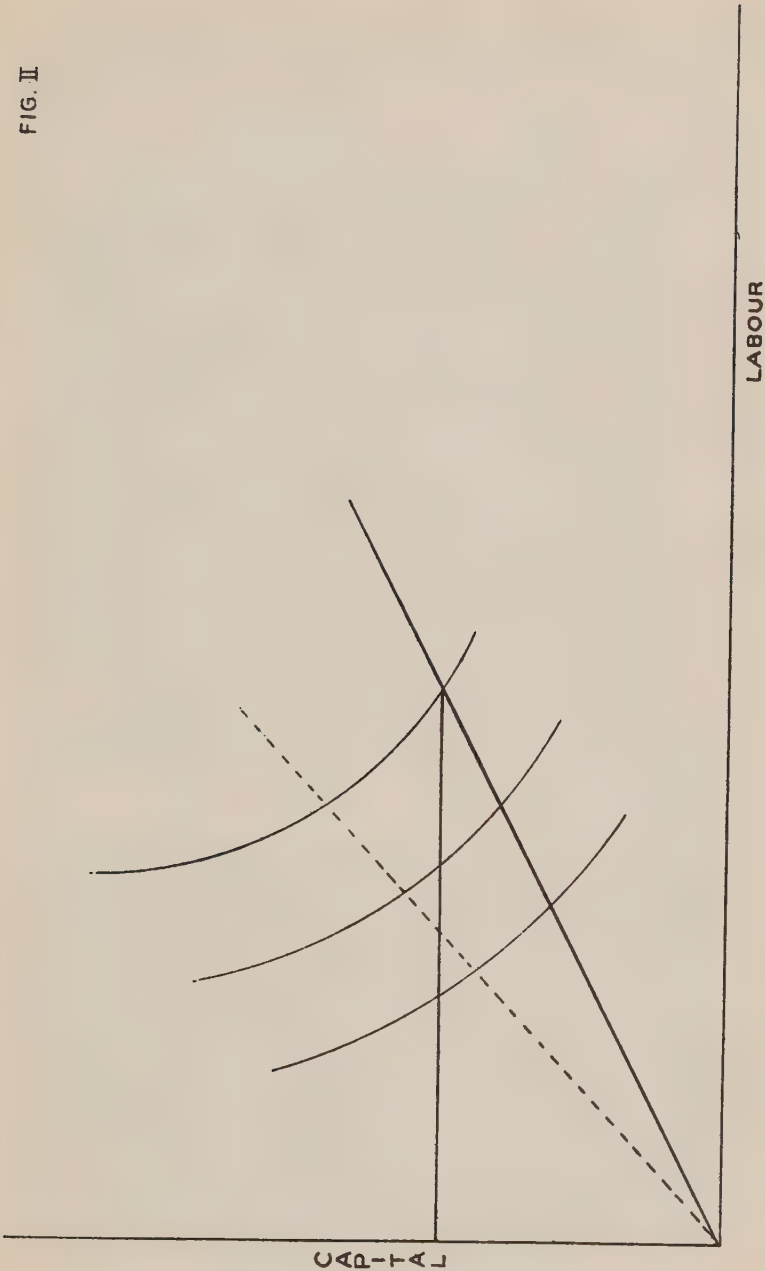
So long as unlimited labour is available at a constant wage, capital accumulation must increase employment, since it cannot pay to use capital as a substitute for labour. This follows from the Law of Diminishing Returns : extra capital

<sup>1</sup>It will not, however, be expanding at constant real wages unless the commodity terms of trade are moving in its favour. See below. Part III, section (c). The argument above shows that peasant prosperity expands capitalist employment to supply the home market; but it may at the same time cause capitalist employment for other purposes (e.g., for export) to decline. Though unlikely, it is theoretically possible for the net result to be a decline in capitalist employment.

<sup>2</sup>This would hardly be worth saying if one reviewer of my book *The Theory of Economic Growth* had not implied the opposite, in spite of the fact that large sections of the book are concerned with how to enrich the peasants!



FIG. II



must yield more when combined with extra labour than if it were merely added to existing capital with the same labour.

Technological change, on the other hand, may increase, reduce or leave unchanged the demand for labour with a given quantity of capital. The neo-classical and the classical formulations of this proposition are not quite the same. In the neo-classical formulation we hold *relative* wages constant, and, assuming that the isoquants fulfil the conditions of constant returns to scale, we can read off along a straight "Engel" line how much employment corresponds to how much capital. Technological change alters the isoquants, and thus gives us a new Engel line, which may run to the right or the left of the old one. If it coincides with the old one the innovation is said to be neutral as between labour and capital. If it runs to the left, the innovation is biased in favour of capital, and full employment is maintained only by lowering relative wages: absolute wages may, however, still have increased, since the innovation may have increased the national income.

In the classical system, on the other hand, it is the absolute level of wages that is held constant. The innovation must reduce the wage rate relatively to the return on capital, since it will not be adopted unless it increases the return on capital. Thus it must increase the absolute surplus over wages, but it may increase or reduce employment or leave it unchanged; and even national income as a whole, may be increased, reduced or left unchanged.

Ricardo stated this correctly,<sup>1</sup> and though he was berated by McCulloch<sup>2</sup> for making this concession to the enemies of capitalism, he stuck to his guns. J. S. Mill agreed with him.<sup>3</sup>

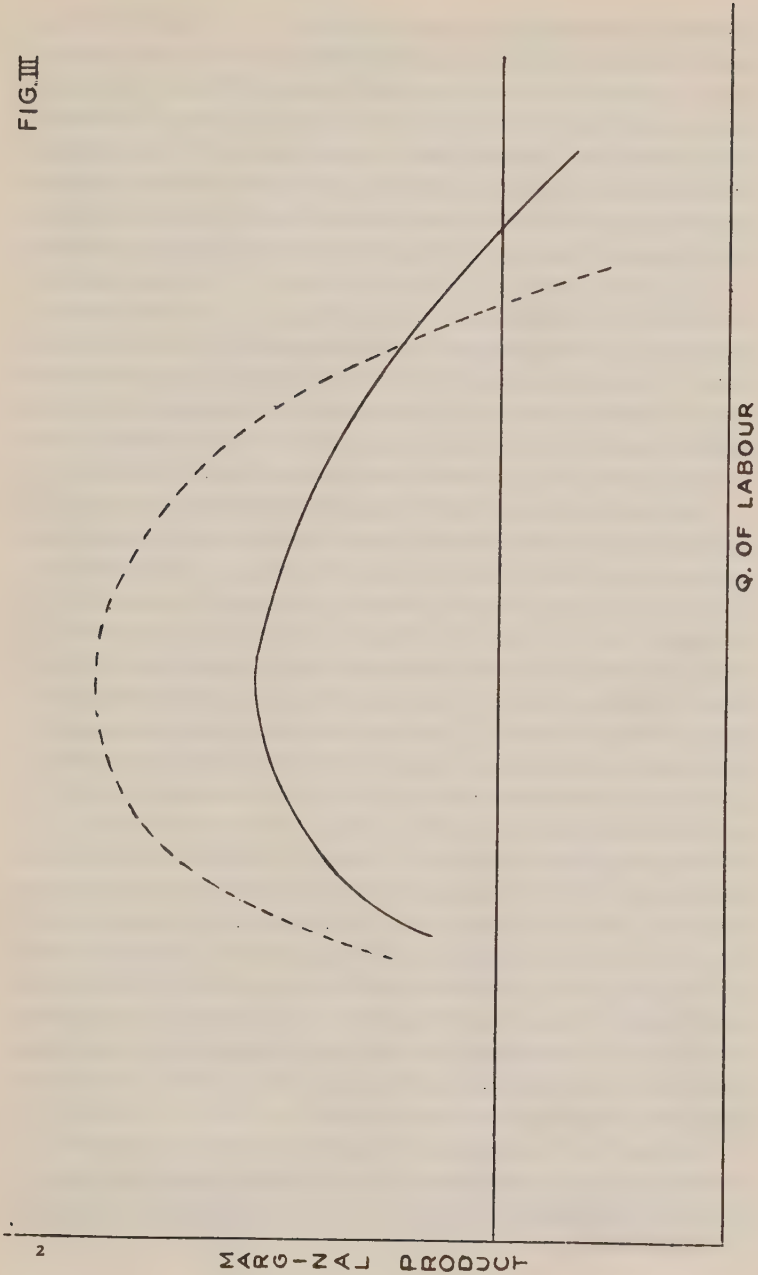
The same problem can be formulated in another way: should capital be used where it is marginally most profitable, or where the capital-output ratio is marginally lowest? This problem does not arise in the neo-classical model; since the quantity of labour is fixed in that model, we maximise output by maximising the return on capital. But in a system where the

<sup>1</sup>*Principles of Political Economy and Taxation*, Chapter XXXI, "On Machinery."

<sup>2</sup>*Letters of Ricardo to Malthus*, Bonar edition, p. 184.

<sup>3</sup>*Principles of Political Economy*, Vol. I, Book I, Chapter VI.

FIG. III



quantity of employment is variable, the most profitable uses of capital need not be those which maximise output or employment. Adam Smith was troubled by this difference—as many recent writers have been—and he devoted Chapter V of Book II to the subject. Malthus also touched on it, in the passage already quoted. Ricardo answered that what matters is not to maximise output but to maximise the surplus over wages.<sup>1</sup>

This was the same answer which he and Mill gave on the subject of technological unemployment. They argued that technological change must in the long run be favourable to employment, even though it might temporarily reduce employment. This was because the innovation must increase absolutely the surplus over wages, or it would not be adopted. Since the surplus increased, capital accumulation would proceed more rapidly, and so employment must increase more rapidly.

We have thus two forces operating in different directions: capital accumulation, which must increase employment, and technological change, which may sometimes reduce employment. One cannot say *a priori* which must win out. Using hindsight we can see that Ricardo was right: even though some technological change reduces employment, the combination of capital accumulation and of the kind of technological change which increases employment, has brought about an immense increase in the demand for labour. This is the classical answer to those who want to restrict innovation in order to protect employment.

The validity of this answer, however, depends upon several conditions. First, it depends upon the assumption that it is more important to maximise output and employment in the long run than in the short run. This in turn depends partly on how rapidly capital is accumulating, since this determines how short the short run is. One is more likely to accept the objective of maximising the surplus if capitalists are using most of the surplus for capital accumulation than if they are using it mostly for consumption.

Secondly, the argument depends on the assumption that the rate of accumulation depends primarily upon the level of

<sup>1</sup>*Op. cit.*, Chapter XXVI. Also *Notes on Malthus*, Sraffa edition, pages 18-22.

profits. This is true enough in a pure capitalist system, but it may not be true in a directed economy. For example, in an increasing number of countries, saving is financed to some extent out of taxes, levied upon all classes of the economy. If saving is a function not of profit but of national income, then the rate of accumulation is maximised by maximising not profit but national income, and innovations which reduce the national income (or fail to increase it) while increasing profits should be resisted.

Given that accumulation is a function of profit, the application of the Ricardian argument depends thirdly upon the assumption that the market for capital is perfect. Otherwise it has first to be demonstrated that capital could not be used more profitably in some alternative way than in exploiting the innovation which involves technological unemployment. In a perfect market economy, where capital flows always towards the most profitable uses, this may be taken for granted, but conditions may be different in the real world.

Thus, in India, much capital formation is done by the government, at low interest rates. The real return on irrigation works, steel plants, railways and roads is not measured by the interest yielded by government bonds, or by the profits earned at the prices fixed by the government. Indian planners believe the real social return on capital used in such purposes exceeds the real social return on capital invested in new cotton mills; since, given that there is surplus labour in the cottage industry, capital investment in cotton yields no more cotton goods than would otherwise be available—it merely reduces employment. The return to private shareholders is nevertheless higher in cotton than in lending to the government. If the planners are right, the national income is increased by prohibiting further investment in cotton at present, and by channeling savings into more productive uses, until the catching up of demand with supply from existing cottage sources, raises the real productivity of new investment in cotton beyond marginal productivity in other sectors.

The only difference which the accumulation argument makes to this reasoning is to substitute maximisation of the surplus over consumption for maximisation of national income.



Instead of saying that the Indian planners are right if the real social marginal productivity of capital is greater elsewhere than in cotton, one must say that they are right if capital creates a greater surplus elsewhere than it does in cotton. Conversely, if one wishes to prove them wrong, one must show that investment in cotton would lead to a greater increase in savings than would investment in irrigation, steel, or other alternative uses of capital. This their critics have not even tried to do.<sup>1</sup>

### III. THE RATE OF PROFIT.

#### (a) *The Connection between Profit and Accumulation.*

The expansion of the capitalist sector does not depend upon whether saving is done out of profits or out of other incomes. Whether saving is done out of wages, salaries, rents, or the incomes of the self-employed, so long as saving is channeled into investment in the capitalist sector, that sector will expand.

The assumption that most saving comes out of profit is relevant only in the context of explaining why the ratio of saving to national income increases in the first stage of economic development. For this explanation to work one need not assume that all saving comes out of profit ; it is necessary only that the marginal propensity to save should be higher out of profits than out of other incomes. Then it will follow that, as the capitalist sector expands, and profits rise relatively to national income, the ratio of savings to national income will rise.

<sup>1</sup>Vakil and Brahmanand (*loc. cit.*) found a fierce criticism of India's protection of cottage weaving upon the argument that factory production gives rise to a greater surplus of savings than does cottage production. But they never mention that the imperfection of the capital market makes it possible that capital could be more profitably used (in the real sense) in other sectors, giving rise to a larger savings potential and a greater increase in savings than would accrue from profits in capitalist cotton production.

It is useful to have this explanation of the rise in the savings ratio which accompanies economic growth.<sup>1</sup> As argued in my earlier article, the rival explanations do not carry conviction : saving does not rise automatically with income per head ; it is not a function of inequality as such, which is also not necessarily greater in rich than in poor countries ; and class by class, there is no evidence of increasing thriftiness during the relevant periods. The proposition that the marginal propensity to save is higher out of profits than out of other incomes is the best explanation we have of why the savings ratio rises in the first stage of economic development.

Moreover, the model explains not only why the savings ratio rises in the first stage of development, but also why it ceases to rise in the second stage, and this adds to its merit.

The classical economists did not all assert that profit is the source of saving. They agreed that a high rate of profit acts as an incentive to saving, but this is a different matter. They also agreed that saving comes mainly out of the surplus over wages, i.e., in their system, out of rents and profits. Malthus asserted that saving is done out of profit, while landlords use their income rather for consumption.<sup>2</sup> In this he was preceded by David Hume<sup>3</sup> and by William Spence<sup>4</sup> and was followed

<sup>1</sup>U. statistics do not show a significant increase in the savings ratio in forty years before the first World War. This may be due to corrections of the statistics, but it may also have other explanations. One is that since the country was being peopled with immigrants, who are notoriously thrift-minded, the propensity to save out of non-profit incomes may have been higher than elsewhere ; the farmers in particular seem to have been very thrifty (farmers employing labour count as capitalists in the Ricardian system). Another is that in a country developed with immigrant labour the non-capitalist sector may be very small from the start ; there is then little room for expansion of the capitalist sector relatively to the economy as a whole, so profits rise relatively to national income only if the profit margin is rising in the capitalist sector (see below, section (b)). A third possible explanation is that wages were rising rapidly, so profits did not rise as much relatively to national income as they would have done if wages had been constant. Wages were rising partly because productivity was increasing in the sources whence labour was being recruited (from Europe and also from domestic agriculture) (see below, section (c)). There was also an inflow of foreign capital, helping to raise wages.

<sup>2</sup>*Op. cit.*, pp. 465-6.

<sup>3</sup>*Essays, Moral, Political and Literary*, Vol. I, Part II, Essay IV, "Of Interest."

<sup>4</sup>*Britain Independent of Commerce*, 1808, quoted in Maurice Dobb, *Political Economy and Capitalism*, p. 51.

by Marx.<sup>1</sup> Smith, Ricardo, and J. S. Mill, however, are silent on this issue. Ricardo probably accepted the Malthusian version. At any rate, he had so many opportunities to dispute it, and he disputed so much else, that one may reasonably conclude from his silence that he was willing to accept it.

(b) *The First Stage of Development.*

So long as unlimited labour is available at a fixed real wage, the share of profits in the national income will increase. There are two reasons for this. First the share of profits in the capitalist sector may increase. And secondly the capitalist sector will expand relatively to national income.

Let us note first that in this system the rate of profit on capital cannot fall. As Ricardo pointed out,<sup>2</sup> however big the increase in capital may be, it can always be matched by a proportionate increase in the employment of labour. With given technology and unlimited labour at constant wages, no "deepening" of capital takes place; only "widening." So the rate of profit on capital is constant. This was the point Ricardo continually reiterated to Malthus: the rate of profit could fall only if wages were rising. Ricardo thought that diminishing returns to land would raise wages, but we shall come to this in section (c).

Assuming away diminishing returns to land, the rate of profit on capital cannot fall. On the contrary, it must rise, because all the benefit of technological progress accrues to capital, the wage rate being constant. Thus, the rate of profit rises all the time, while the wage rate is constant. What happens to the relative share of profits depends partly on what technological progress does to the demand for labour. Relative shares in the capitalist sector will be constant if technological change increases the demand for labour in exactly the same proportion as it raises the rate of profit; but the relative share of profits will rise if technological progress reduces the demand for labour, or leaves it unchanged, or increases it insufficiently. Though technological change must raise the profit rate relatively to

<sup>1</sup>*Capital*, Vol. I, Chapter XXIV, Section 3, "Separation of Surplus Value into Capital and Revenue."

<sup>2</sup>*Principles of Political Economy and Taxation*, Sraffa edition, Chapter XXI, p. 289.

the wage rate, we cannot say *a priori* whether it will raise the share of profits in the capitalist sector, and therefore the ratio of saving. But, from what we know of innovations, it is not improbable that on balance the share of profits in the capitalist sector will rise.

Whatever the effect of innovations may be, the share of profits must rise relatively to national income for another reason, namely, the expansion of the capitalist sector relatively to the rest. This may not always be important. It will not be important if there is not much non-capitalist sector to begin with. Thus, if the capitalist sector expands by bringing immigrants into an empty country, capitalist sector and national economy virtually coincide. If the immigrants are available at a constant wage, the profit ratio may grow because of technological change, but not because the capitalist sector expands relatively to the national economy. Even if the non-capitalist sector is large, the capitalist sector will not expand relatively to the whole if the non-capitalist sector is growing as rapidly. This is unlikely, for reasons given when we discussed the superior productivity in the capitalist sector.

Thus, so long as labour is available at a constant wage, profits will grow relatively to national income, unless innovations are on balance highly favourable to the demand for labour ; the savings ratio will grow, and the rate of growth of national income will accelerate.

(c) *The Turning Point.*

This acceleration must continue so long as the share of profits in the national income is increasing. Anything which raises wages relatively to profits will check the speed at which the rate of profit on capital is increasing ; it may stabilise the share of profits (and so the rate of growth of the economy), or it may even cause the share of profits to fall. (As before, what happens to relative shares depends on what happens to employment as well as on what happens to rates of wages and profits).

Profits may be checked for one of three classes of reasons :

(i) Wages may rise, or profits fall, for exogenous reasons not due to the expansion of the capitalist sector itself. (ii) The



terms of trade may turn against the capitalist sector because of its expansion. Either (i) or (ii) may end the expansion of the capitalist sector even though there is still surplus labour available at the ruling wage. If not, expansion must eventually result in (iii) the supply of labour becoming inelastic, because capital accumulation has caught up with the labour supply.

(i) *Exogenous factors*. In this category we include checks which do not themselves result from the expansion of the capitalist sector. There are several possibilities, including natural disasters such as epidemics or earthquakes. We consider just three economic examples.

First, real wages may rise even though the labour supply is abundant. In the classical system the normal level of wages is the subsistence level at which the working class exactly reproduces its numbers. In Asia or Africa the wage floor is set by the productivity of small scale agriculture : men will not accept wage employment unless it yields at least as much as they would consume if they remained on the farm. In practice it must yield even more, perhaps as much as 50 per cent. more ; and thus the floor is set to wages. On the other hand, while the existence of excess supply makes it possible for capitalists to hold the wage at this level, they do not necessarily keep it there. For one thing, they may have moralistic notions which limit the rate of profit on capital ; e.g., they may think that a profit margin of say 25 per cent. is adequate, and they may therefore deliberately raise wages as productivity increases. Or they may react in the same way towards trade union pressure, or even to ward off the growth of unions. Thus, large industrial corporations in Japan pay wages twice as high as small industrial employers pay. If this is how capitalists normally behave, there will be an ever-widening gap between the wages they pay, and the subsistence wage at which unlimited labour is still available. This is consistent with Marx's proposition that the rate of exploitation or surplus value is constant,<sup>1</sup> which amounts to saying that the wage rate

<sup>1</sup>*Capital*, Book III, Chapter XIII "The Theory of the Law" (of the falling tendency of the rate of profit). There are "Counteracting Causes" in Chapter XIV, but the availability of labour at a constant wage rate, which is so important to the rest of his system, and which is inconsistent with Chapter XIII, is not mentioned here.



risers as rapidly as productivity ; elsewhere he says the opposite—wages are constant at the subsistence level—but he may have been unintentionally right. If so, rising wages are not an exogenous but an endogenous check. However, if we assume that wages rise proportionately with productivity, this does not stop capitalist expansion. It makes profits a constant proportion of income in the capitalist sector. Profits will still be a rising proportion of national income if there is a non-capitalist sector which is not expanding so rapidly. If there is no non-capitalist sector (e.g., a country developed by immigration for capitalist employment) profits and saving are a constant proportion of national income throughout, and the rate of capitalist expansion does not accelerate.<sup>1</sup>

Alternatively, wages may rise exogenously because the source from which labour is recruited is experiencing increasing productivity. Thus, if labour is being recruited from abroad, through immigration, from countries where wages are rising, wages will have to rise at home, too, or the rate of expansion will be checked. Malaya did not have to pay rising wages to Indians or to Chinese for this reason, but North America may have had to pay rising wages to European immigrants. Similarly, if labour is being recruited from peasant agriculture, where productivity is rising, it may be necessary to pay higher wages. This depends partly on whether the capitalist sector and the peasant sector trade with each other. If they do not trade, rising productivity in the peasant sector will certainly

<sup>1</sup>The evidence as to the behaviour of wages during the British industrial revolution is conflicting. Even contemporary writers disagreed. Professor T. S. Ashton suggests that we should think in terms of two groups of workers : those who benefited from the expansion of factory employment, and those who did not ("masses of unskilled or poorly skilled workers—seasonally employed agricultural workers and handloom weavers in particular"). There is no doubt that the former group increased in numbers relatively to the latter. Since the wage rate was higher in the capitalist sector than outside, this transfer of workers into the capitalist sector would automatically raise the "average" standard of life of the workers in the economy as a whole, even if the real wage in the capitalist sector remained constant. See "The Standard of Life of the Workers in England, 1790-1830" in *Capitalism and the Historians*, ed. F. A. Hayek. The question whether real wages in the capitalist sector rose during the first half of the nineteenth century remains unsettled. What with Irish immigration and a falling death rate, capital seems not to have caught up with labour supply until the second half of the century.

force up wages in the capitalist sector. If they trade, however, rising productivity may to some extent be offset by deteriorating terms of trade, even to the point where wages, considered not in terms of wage goods in general, but in terms of the commodities produced in the capitalist sector, may actually be reduced because the terms of trade are moving in favour of the capitalist sector.

A rise in real wages stops the profit rate from growing as rapidly as it otherwise would, but it does not necessarily bring expansion to an end. It will not even stop the acceleration of growth, if productivity is rising faster than wages. There may have been cases, in the real world, where the capitalist sector of a country ceased to expand because of an exogenous rise in wages, but one cannot think of many such cases. On the other hand, this is happening all the time in the expansion of towns or regions within a country, where the expansion of employment in one place, relatively to the rest of the economy, is brought to an end because developments elsewhere raise wages and drain away labour.

(ii) *The Terms of Trade.* Profits may be checked because the expansion of the capitalist sector moves the terms of trade against it. In these cases real wages remain constant, in terms of purchasing power over wage goods in general, but profits fall because a larger amount of the capitalist product has to be surrendered to and by the workers in order to purchase the constant quantity of wage goods.

The classical economists all predicted this fate for capitalism, because they believed that diminishing returns in agriculture would move the terms of trade in favour of landlords. Adam Smith had stated the opposite. In his system there is more than adequate technological improvement in agriculture, and rents diminish constantly relatively to national income.<sup>1</sup> So far Smith has proved right and the Ricardians wrong in all countries where agriculture is on a capitalist basis.

The position is quite different, however, in countries where agriculture is on a peasant basis. We know that productivity can increase sharply in peasant agriculture if research is being

<sup>1</sup>*The Wealth of Nations*, Modern Library edition, Book II, Chapter III, page 318.

done into peasant problems, and if an agricultural extension system, an agricultural credit system, roads, water supplies and so on are provided on an adequate basis. We also know, however, that peasant agriculture has a tendency to stagnate in the absence of such measures, and also that such measures have been adopted in relatively few countries. If the capitalist sector trades with the peasant sector (e.g., depends on it for food or for raw materials and therefore for markets), its continued expansion would be menaced if the peasant sector were stagnant, since this would move the terms of trade against the capitalist sector. In practice, failure of peasant agriculture to increase its productivity has probably been the chief reason holding down the expansion of the industrial sector in most of the under-developed countries of the world.

If domestic agriculture fails to expand, capitalist industry can nevertheless continue its expansion if it can substitute foreign trade. The expansion of industry then leads to ever-increasing imports of food and raw materials, matched by exports of manufactures. This, however, depends on the skill of the industrialists in opening up foreign markets. If they are inefficient competitors in foreign trade, the terms of trade will turn against them; the expansion of home industry has then to be slowed down to the rate which the expansion of foreign trade is able to carry.<sup>1</sup>

An adverse movement of the terms is due to "unbalanced growth" of the various sectors of the economy. This may occur at any stage of economic development, at the beginning, in the middle, or after a century of rapid progress. It is probably the main reason why only a few countries have made substantial progress.

(iii) *Exhaustion of the Surplus.* It is possible for the capitalist sector to cease expanding long before the labour surplus is exhausted. Wages may be rising for exogenous reasons faster than productivity, so that expansion is checked even though at any time there is an excess supply of labour at the market rate. Similarly, profits may fall relatively to wages, through adverse terms of trade, although there is a perfectly

<sup>1</sup>For further discussion of this phenomenon, see my article "International Competition in Manufactures," *American Economic Review*, May, 1957.

elastic labour supply at a wage rate constant in terms of its purchasing power over wage goods. The system may, however, escape either of these fates. In that case, the capitalist sector will expand until capital accumulation catches up with the labour supply, whereupon we reach a new stage of economic development.

If the capitalist sector expands fast enough, it must sooner or later embrace the whole economy; and wages will start to rise long before this happens.<sup>1</sup> Adam Smith recognized that capital could catch up with labour supply, and raise wages in the process.<sup>2</sup> Malthus, Ricardo and the other classical economists denied this, because they thought that population growth must keep up with accumulation. In this they were wrong. Medical knowledge was not in their day adequate to reduce death rates below 20 per 1,000 in Europe (North America seems to have been healthier) so the population could not increase faster than 2 per cent. per annum. Even to-day increases exceeding 3 per cent. per annum are most exceptional. Since capital can increase by more than 3 per cent. per annum, there is no difficulty in exhausting the labour surplus in due course.

Marx rejected the Malthusian population theory, but still thought that there would always be a surplus. He recognized that capital could catch up with the labour supply, since accumulation, as distinct from technological change, always increases employment if wages are constant. He argued, however, that once the limit of labour supply was reached, accumulation would raise wages, this would promote the "deepening" of capital, and so wages would fall back to their previous subsistence level.<sup>3</sup> This is an error in the same class as "if the demand increases the price will rise; this will reduce the demand, and so the price will return to its previous level." Deepening and a rise in wages are not substitutes for each other; deepening occurs only to the extent that wages rise. One can

<sup>1</sup>As people transfer from the non-capitalist to the capitalist sector, pressure is relieved, real consumption per head increases, and this shows itself sooner or later in a rise in the supply price of labour, even though there is still a labour surplus.

<sup>2</sup>*Op. cit.*, Book I, Chapter VIII, pp. 68-70.

<sup>3</sup>*Capital*, Vol. I, Chapter XXV.



make better sense of Marx by ignoring this error, and resting his case instead upon adverse technological inventions. Then, as soon as capital catches up with labour, and starts to raise wages, capitalists turn to the kind of innovation which reduces the demand for labour. No matter how fast capital may accumulate, the argument must continue, capitalists are always able to find enough technological innovations of the adverse kind to offset capital accumulation and also those innovations which increase the demand for labour. Now such a statement is a statement of fact. Marx gave no reason why it should be so. Yet practically the whole of his system rests on this assertion about the nature of technological progress—for it is this that keeps wages at the subsistence level, this that (in his under-consumption moods) produces the disproportion between saving and consumption, this that produces the ever-increasing reserve army of unemployed, this that increases the misery of the working-class, and so this that ultimately brings revolution and communism. Seldom has so much depended upon so little.

Where Marx was right was in making the point that for a while the capitalist sector creates surplus labour by invading sectors to which it is superior, especially by putting the handicraft workers out of business, and also by reducing the labour requirement in agriculture, if it is permitted to reorganize agriculture on a capitalist basis. A corollary of this is that, from the point of view of capitalist expansion, even a pre-capitalist economy with abundant land is capable of developing a labour surplus. For example in most of Africa and Latin America labour is more or less fully employed, since there is no shortage of cultivable land. However, a labour surplus could be created by the expansion of capitalist production at the expense of pre-capitalist forms of handwork, in manufacturing, in agriculture and elsewhere. But this substitution cannot continue forever. Sooner or later the pre-capitalist forms are all destroyed, and the labour surplus is exhausted.

Once capital catches up with labour, the supply of labour becomes inelastic. The countries which have surplus labour have never reached this stage. Their capitalist sectors have begun to expand at one period or another, but their expansion

has hitherto always been checked by an unbalanced development, with labour still in excess supply.

(d) *The Second Stage of Development.*

When capital catches up with labour supply, an economy enters upon the second stage of development. Classical economics ceases to apply ; we are in the world of neo-classical economics, where all the factors of production are scarce, in the sense that their supply is inelastic. Wages are no longer constant as accumulation proceeds ; the benefits of improved technology do not all accrue to profits ; and the profit margin does not necessarily increase all the time.<sup>1</sup>

Adam Smith seems to be the only economist to have recognized that there are these two different stages of economic development, with two different sets of results. Marx recognized that capital must sooner or later catch up with labour supply, but he evaded the issue.<sup>2</sup> The neo-classical economists in their turn have ignored the existence of the first stage ; have erroneously applied second-stage analysis to first-stage problems ; and have rudely brushed aside the classical writers as if their model were a mere evasion of reality. Failure to grasp the distinction between the two stages of development is the main reason why the historians of economic thought have made so little sense of the classical writers.

Once the second stage is reached, what happens to the profit ratio, savings, etc. ? Classical economics does not deal with this problem. Neo-classical writers have put forward

<sup>1</sup>Some pre-capitalist economies, where land is abundant (e.g., in Africa) have a formal similarity to second stage capitalist economies, in the sense that they have no labour surplus. Nevertheless, since a capitalist sector could expand within these economies at constant wages, by destroying their small scale manufacturing and agricultural sectors, and so producing a labour surplus, these economies are more properly regarded as being in a stage which precedes the first stage of capitalist expansion than as being in the second stage. In other words, Adam Smith and Karl Marx throw more light on how these economies will develop than does Walras or Pigou.

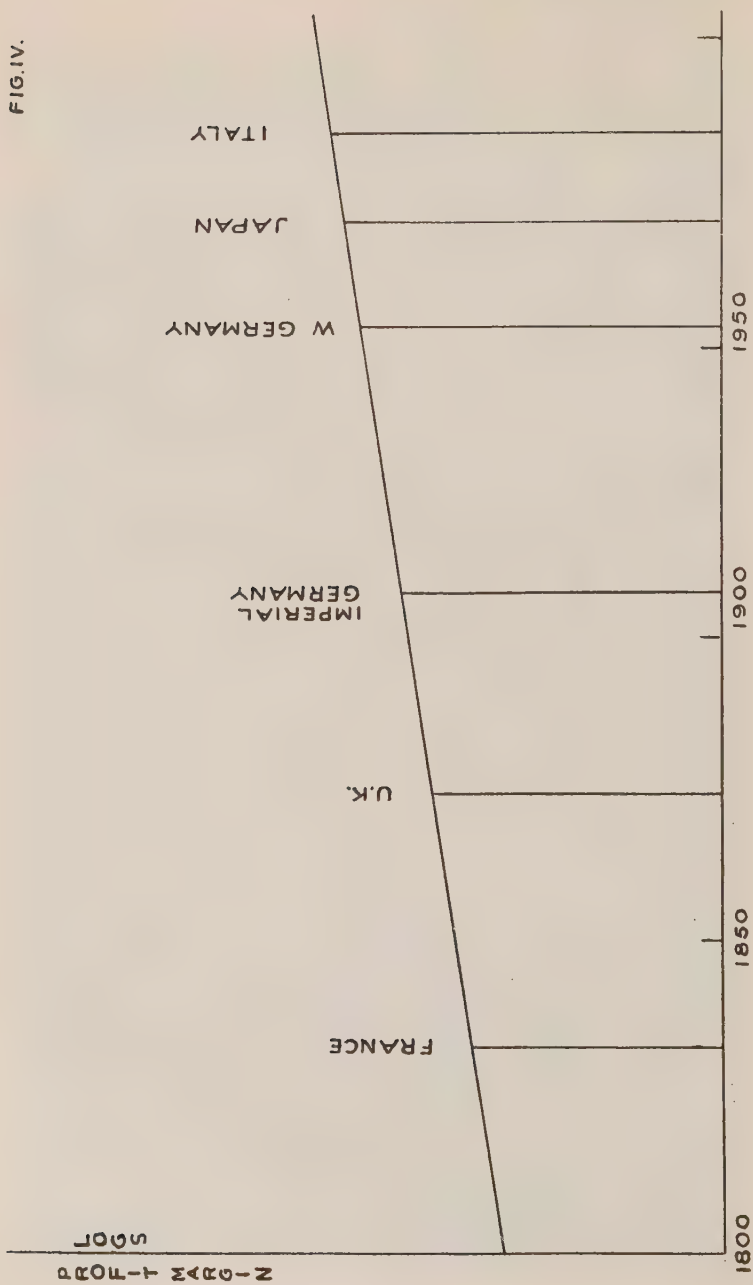
<sup>2</sup>Lenin recognized that there is more than one stage of capitalism, but he gave the wrong reason for this. Following Marx, he did not see that real wages must rise, and he attributed the phenomena of the second stage (capital export, etc.) to the concentration of capital in monopolies. Also he had no warrant for suggesting that there are only two stages. V. I. Lenin, *Imperialism, the Last Stage of Capitalism*.

many theories of distribution (marginal productivity, perfectly elastic supply of capital, the degree of monopoly, Keynesian equilibrium between investment and saving via the profit ratio, etc.) but their very profusion shows how unsatisfactory they all are.

Whichever neo-classical theory may win the day, it seems that one of the facts it will have to explain is why the ratio of profits to national income becomes relatively stable (apart from cyclical variations) in the second stage. The classical model cannot explain this, but if one accepts the stability, the classical model can throw light on the level at which the ratio stabilises. For, since the ratio rises during the first stage and then stabilises, the task of explaining where it stabilises really belongs to the first stage, and so to the classical model.

This line of explanation traces back to the proposition that during the first stage technological innovation raises the rate of profit on capital, but not the wage rate. Wherefore, unless innovations are on balance very favourable to employment (raising employment as much as they raise the profit rate) the profit margin will increase all the time. We may represent the situation schematically by supposing that technology has been raising productivity steadily since some such arbitrary date as 1800 A.D., and has raised profits faster than employment. Then, in every country in the first stage of development, the potential profit margin would rise from 1800 to such date as it entered its second stage of development. It follows that profit margins will be lowest in countries which reach their second stage earliest, and will be highest in countries where the second stage is longest delayed. It follows also that the countries which begin to develop latest will stabilise with higher savings ratios and higher rates of growth than those which reach their second stage earliest. The conclusion is subject to many modifications.

- (1) The effect of innovations on employment is not the same in every country.
- (2) The capitalist sectors of different countries do not use the same technology at the same time.
- (3) Subsistence wages are not the same in different countries, and are increasing at different rates ; profit margins should be much higher in countries where the peasants' productivity is low, such as Central Africa, than where it is high, such as Japan.





(4) The margin between actual wages and the subsistence level is not the same everywhere. And (5) the international migration of capital tends to prevent differences in the rate of profit from being as wide as they would otherwise be. Nevertheless, there is a little evidence supporting the order which is indicated in the accompanying diagram. France seems to have reached her second stage earliest in Western Europe, because of her slow population growth and comparatively stagnant agriculture. Western Germany entered upon a new first stage after the second world war, because of refugee immigration ; she has recently re-entered the second stage. Of the advanced capitalist countries, profit margins seem to be highest in Western Germany, in Japan (which now expects to reach its turning point in about ten years, because of the sharp fall in its birth rate) and in Italy, where the labour surplus is still substantial.

#### IV. RICARDIAN SOCIALISM.

Analysis is not the same as prescription. This model shows that employment expands as the share of national income accruing to private profits increases. It does not follow that those who make this analysis advocate increasing the share of private profits in the national income.

Both Adam Smith and Ricardo refuted this charge specifically. In Adam Smith's model the rate of wages rises continuously, and both the rate of profits and also the share of rent in the national income fall. He welcomed this state of affairs :

"Is this improvement in the circumstances of the lower ranks of the people to be regarded as an advantage or as an inconveniency to the society? The answer seems at first sight abundantly plain. Servants, labourers and workmen of different kinds, make up the far greater part of every great political society. But what improves the circumstances of the greater part can never be regarded as an inconveniency to the whole. No society can surely be flourishing and happy, of which the far greater part of the members are poor and miserable. It is but equity, besides, that they who feed, clothe and lodge the whole body of the people, should have such a share of the produce of their own labour as to be themselves tolerably fed, clothed and lodged." <sup>1</sup>

<sup>1</sup>*Ob. cit.*, page 78. See also pp. 87 and 92-5.

Even Ricardo wanted wages to rise at the expense of both profits and rents. What prevented this, in his model, was that population increases if the wage rate rises above the natural rate. However,

"It is not to be understood that the natural price of labour, estimated even in food and necessities, is absolutely fixed and constant. It varies at different times in the same country, and very materially differs in different countries. It essentially depends on the habits and customs of the people . . . The friends of humanity cannot but wish that in all countries the labouring classes should have a taste for comforts and enjoyments, and that they should be stimulated by all legal means in their exertions to procure them. There cannot be a better security against a super-abundant population.<sup>1</sup>"

With these words Ricardo opened the door to the socialists, for these words implied that rent and profit were an arbitrary levy, the size of which was determined wholly by the attitude of the working classes toward reproduction, as reflected in the natural price below which they would not maintain the labour force. The argument was thus shifted from the analytical to the ethical plane. What right had land and capital to share in the produce of labour? As Thomas Hodgskin put it :

"The landlord and the capitalist produce nothing. Capital is the product of labour, and profit is nothing but a portion of that produce, uncharitably exacted for permitting the labourer to consume a part of what he has himself produced.<sup>2</sup>"

Marx despised these Ricardian socialists. He called them "utopians" because they shifted from the analytical to the ethical plane. He preferred his own "scientific" demonstration that the socialist revolution was inevitable. But apart from the failure of his "science," in the last analysis it is on the ethical plane that social problems have to be solved.

The capitalist has found defenders along two lines. First, the marginal productivity theory of distribution denies that the whole produce is due to labour, and claims to be able to show precisely how much is contributed respectively by labour, by land, and by capital "at the margin." This returns the question to the analytical plane, without answering the ethical question. Even if one can calculate the marginal productivity

<sup>1</sup>*Principles*, pp. 96, 100.

<sup>2</sup>Quoted in Esther Lowenthal, *The Ricardian Socialists*.

of land, it does not follow that a particular group of citizens, entitled landowners, should receive a sum equal to marginal product times quantity. The marginal productivity theory shows how much *land* puts in *at the margin*, and how much *landowners* are able to extract *in total*, in a purely competitive society ; but it does not tell us how much landowners *should* get, if anything.

The second line of defence proceeds along Benthamite lines by demonstrating that it is necessary to the good of society as a whole, including the workers, that capitalists should receive a large share of the product—both to encourage enterprise, and also as a source of saving. This implies that neither enterprise nor saving is possible without private profit. The answers to this are well known. The school of co-operators advances co-operative enterprise and saving as one alternative; the socialists advance public enterprise and public saving as another alternative. The answers to these answers are also well known. Thus the purpose of this postscript is fulfilled : to warn the reader that he should not try to deduce directly from this model of economic expansion any prescription relating to the social institutions which economic development requires.

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## APPENDIX

I take this opportunity to draw attention to two errors in the earlier article, which have been pointed out by Professor Harry Johnson.

1. On page 174 it is implied that if the elasticity of demand for food were unity, increased productivity in the subsistence sector would be exactly offset by an adverse price movement. This neglects the fact that, since the subsistence workers consume some of their own product, their income elasticity of demand for it has to be taken into account as well as the buyers' price elasticity. My formulation would have been correct only if the subsistence workers sold all they produce. However, the main points of the paragraph are unaffected, namely that the capitalist sector benefits if the change in the terms of trade more than offsets the increase in productivity, and secondly that this is what happens in practice.

2. On pages 182-3 it is assumed that "both countries produce food but do not trade in it," as well as that each produces a second product. It is then concluded that the relative prices of these second products are determinate. However, these relative prices are determinate only because it is assumed that one unit of food in country *A* must equal one unit of food in country *B*, and it is only the possibility of trade in food which ensures this equality. My assumption therefore is not that they do not trade in food, but that whether they do or not, equilibrium is maintained by the possibility of trade. But, given that this is the assumption, case two on pages 182-3 is really only a special example of case three on page 185.



# Estimates of Elasticities of Demand for Exports of the United Kingdom and the United States, 1921-1938<sup>1</sup>

This study was prompted by the belief that demand elasticities in international trade are large enough to make moderate devaluations effective in correcting balance-of-payments deficits. In this study estimates of elasticities of demand for manufactured exports of the United Kingdom and United States are derived from data for the years 1921-1938. These estimates, obtained for individual commodity exports of both countries, suggest that the elasticities of demand for the total exports of the United Kingdom and the United States may be in the neighbourhood of -3.

Several problems are encountered in studies in which elasticities of demand are estimated from least-squares regressions of quantity exported on relative prices and income. In large part, the least-squares estimates obtained do not appear to be statistically significant. J. J. Polak, for example, investigated export and import demand relationships for twenty-five countries for the years 1924-1938. He concludes that "not much importance . . . [can be] attached to the price coefficients . . . [and that] in less than half of the export equations could a price elasticity . . . with the proper sign be found."<sup>2</sup> Other investigators have shown that such least-squares estimates are also likely to be biased. Orcutt demonstrates that estimates based on regressions of quantity on price have a downward bias.<sup>3</sup> In a study of import demand Harberger shows that such estimates should be considered lower limits. By assuming plausible values for income-elasticities of

<sup>1</sup>This article is based on material taken from my unpublished doctoral thesis, "The Elasticity of Demand for Exports, 1921-1938," submitted at the University of Chicago in 1955. I am particularly indebted to Arnold C. Harberger and Milton Friedman for their many helpful comments and suggestions. I also wish to thank D. Gale Johnson and Proctor Thomson for their help. Any errors, of course, are my own.

<sup>2</sup>J. J. Polak, *An International Economic System* (London: George Allen and Unwin Ltd., 1954), p. 160.

<sup>3</sup>Guy H. Orcutt, "Measurements of Price Elasticities in International Trade," *The Review of Economics and Statistics*, XXXII (May, 1950), 117-132.

demand, Harberger generates ranges of price-elasticities that are "unanimous in lying overwhelmingly above the old least-squares estimates."<sup>1</sup>

Because of the problems encountered in obtaining the usual least-squares estimates, elasticities of substitution between exports of the United Kingdom and the United States are estimated. This approach yields estimates that are statistically significant for a wide range of products and that appear to be relatively unbiased. Since exchange-rate and balance-of-payments stability conditions are expressed in terms of elasticities of demand, a formula is developed to translate the estimated elasticities of substitution into elasticities of demand. In this way the probable effectiveness of devaluations in correcting balance-of-payments deficits can be judged.

An elasticity of substitution ( $B_{12}$ ) between the exports of two countries (1 and 2) is :

$$(1) \quad B_{12} = \frac{\delta (q_1/q_2)}{\delta (p_1/p_2)} \cdot \frac{p_1/p_2}{q_1/q_2}$$

where :

$q_1$  and  $q_2$  are the quantities exported by countries 1 and 2.

$p_1$  and  $p_2$  are the prices of the exports of countries 1 and 2 expressed in units of the same currency.

The following estimating equation provides a lower-limit estimate of elasticities of substitution :

$$(2) \quad \log (q_1/q_2) = A + B \log (p_1/p_2)$$

where  $B$  is the lower-limit estimate. Unless the correlation between  $\log (q_1/q_2)$  and  $\log (p_1/p_2)$  is perfect, a different estimate is obtained from a regression in logs of the price ratio on the quantity ratio (*i.e.*,  $\log (p_1/p_2)$  on  $\log (q_1/q_2)$ ). Such an estimate is an upper-limit estimate.<sup>2</sup>

The lower and upper limits are the central tendencies of the estimates rather than absolute limits. That is, the estimates obtained from regressions of quantity ratios on price ratios tend to be understated (in absolute value); the estimates obtained from regressions of price ratios on quantity ratios, overstated (in absolute value).

<sup>1</sup>Arnold C. Harberger, "A Structural Approach to the Problem of Import Demand," *American Economic Review*, XLIII (May, 1953), 153.

<sup>2</sup>The lower-limit and upper-limit estimates are related by the square of the correlation between  $\log (q_1/q_2)$  and  $\log (p_1/p_2)$ .

Elasticities of substitution are estimated for twenty-seven manufactured exports of the United States and the United Kingdom and for twelve subgroupings of these exports. The twenty-seven exports account for 31 per cent of United States manufactured exports in 1937 (38 per cent in 1927). They account for 36 per cent of United Kingdom manufactured exports in 1937 (44 per cent in 1927). The commodities covered fall into six major groupings: chemicals, iron and steel, machinery and vehicles, nonferrous metals, nonmetallic minerals, and textiles (Table 1).

More than 60 per cent of the correlations shown in Table 1 are significant at the 1 per cent level. The estimates of the elasticities of substitution have appropriate signs (negative) for thirty-seven of the thirty-nine commodities (the twenty-seven manufactured exports plus the twelve subgroupings). If the two cases of positive estimates are excluded from consideration, the lower-limit estimates range from  $-0.08$  (cotton yarn) to  $-5.52$  (motorcycles); the upper-limit estimates, from  $-1.41$  (electricity generators) to  $-89.31$  (cotton yarn). The estimates for cotton yarn are in absolute value the smallest of the lower-limit estimates and the largest of the upper-limit estimates. These estimates reflect the very low correlation found ( $-0.08$ ). Of the negative estimates only four are less than 1 in absolute value. Neither the lower-limit nor the upper-limit estimates clusters around a central value, perhaps reflecting the diversity of commodities considered.

Estimates of elasticities of substitution intermediate in value to the lower- and upper-limit estimates are also shown in Table 1 (column 5). They are computed by dividing the coefficients of variation of the quantity ratios for each commodity by the coefficients of variation of the corresponding price ratios. Such estimates are geometric means of the lower- and upper-limit estimates. They measure the average fluctuation in the quantity ratios per unit of average fluctuation in the price ratios. The estimates calculated in this way range from  $-1.2$  (electricity generators) to  $-12.8$  (copper ingots and bars). Only four of these estimates are less than 2 in absolute value.

**TABLE 1**  
**ELASTICITIES OF SUBSTITUTION : INDIVIDUAL COMMODITY EXPORTS OF**  
**UNITED STATES AND UNITED KINGDOM (1921-1938)**

Commodity	Regression of $q_1/q_2$ on $p_1/p_2$	Regression of $p_1/p_2$ on $q_1/q_2$	r	$\pm$ Coefficient of Variation of $q_1/q_2$ Divided by Coefficient of Variation of $p_1/p_2$
(1)	(2)	(3)	(4)	(5)
<b>Chemicals</b>				
Aluminum Sulphate(a) ...	-2.02	-4.36	-.682	-3.0
Fertilizers ...	-0.55	-3.36	-.404	-1.4
Ammonium Sulphate(b) ...	-3.11	-9.81	-.562	-5.5
Sodium Compounds ...	-1.79	-2.64	-.824	-2.2
Caustic Soda ...	-1.22	-8.49	-.380	-3.2
<b>Iron and Steel</b>				
Pig Iron ...	-3.10	-3.86	-.897	-3.5
Plates and Sheets ...	-2.87	-3.80	-.869	-3.3
Galvanized ...	-1.85	-3.12	-.770	-2.4
Plain ...	-2.55	-3.68	-.832	-3.1
Black ...	-2.41	-4.18	-.760	-3.2
Tinned and Ternerd ...	-4.07	-7.24	-.753	-5.4
Pipes, Tubes and Fittings ...	-3.17	-4.40	-.849	-3.7
Railway Materials(c) ...	-1.52	-2.51	-.778	-2.0
Railway Tracks ...	-1.14	-11.77	-.031	-3.7
Razor Blades(d) ...	1.95	27.46	.267	7.3
Wire Manufactures ...	-2.11	-4.55	-.680	-3.1
<b>Machinery and Vehicles</b>				
Automobiles and Chassis ...	-1.92	-2.63	-.854	-2.3
Electricity Generators(c) ...	-0.98	-1.41	-.833	-1.2
Motorcycles ...	-5.52	-7.04	-.885	-6.2
Radio Sets(e) ...	-1.37	-14.02	-.313	-4.4
Radio Tubes(f) ...	-1.19	-1.44	-.910	-1.3
Sewing Machines(c) ...	-1.34	-2.64	-.711	-1.9
<b>Nonferrous Metals</b>				
Brass Tubes(c) ...	-2.12	-8.66	-.495	-4.3
Copper Manufactures ...	-0.72	-49.90	-.118	-6.0
Ingots and Bars ...	-5.07	-32.12	-.398	-12.8
Plates and Sheets ...	-3.34	-4.57	-.855	-3.9
Rods(c) ...	-4.37	-6.84	-.800	-5.5
Wires (Bare) ...	-3.83	-12.49	-.554	-6.9
Nickel(c) ...	-1.67	-3.02	-.743	-2.2
<b>Nonmetallic Minerals</b>				
Cement ...	-2.61	-3.01	-.931	-2.8
Gasoline ...	-3.81	-16.97	-.473	-8.0
Glass, Plate and Sheet ...	2.10	9.13	.480	4.4
Lubricating Oil ...	-1.95	-2.57	-.872	-2.2
<b>Textiles</b>				
Cotton Cloth ...	-1.45	-3.71	-.625	-2.3
Bleached and Colored ...	-1.14	-4.34	-.513	-2.2
Unbleached ...	-3.27	-4.56	-.847	-3.9
Cotton Yarn ...	-0.08	-89.31	-.030	-2.6
Jute Bags(c) ...	-1.85	-5.87	-.562	-3.3
Woollen Fabrics... ..	-2.83	-6.00	-.686	-4.1
	(a)1925-1938 (d)1930-1938	(b)Excluding 1926 (e)1931-1938	(c)1922-1938 (f)1927-1938	



In addition to the estimates for individual commodities, elasticities of substitution are calculated for the total of manufactured exports for the United States and the United Kingdom. Elasticities of substitution are also calculated for the total of German and Canadian manufactured exports with respect to the manufactured exports of the United States and the United Kingdom. A majority of the estimates for total manufactured exports are positive, rather than negative. The negative estimates do not differ from zero by an amount that is statistically significant. Two factors may help to explain the failure to obtain significant, negative estimates for total manufactured exports. First, there is the problem of deriving index numbers that adequately measure price and quantity changes. Second, the commodity composition of the total of manufactured exports is different for each of the countries.

Since the results for total manufactured exports differ from those for individual commodity exports, a general question is suggested. That is, under what empirical conditions are elasticities of substitution likely to be effectively estimated?

One important condition is the occurrence of major supply shifts in the period under study. This condition is a requisite for the estimation of demand elasticities regardless of the approach used. It provides that data on prices and quantities contain a number of clear observations of quantities demanded at various prices. For the years 1921-1938 the data on United States and British exports have a number of such observations. These observations resulted from the United Kingdom's fluctuating exchange rate of 1921-1925 and from the devaluations of the pound and dollar during the 1930's, changes in one country's exchange rate having been translated into new sets of supply prices for the country's exports.

A second important empirical condition is that the ratios of the quantities of compared exports have not been substantially affected by changes in world income and other prices. The significance of this condition can be seen in the following analysis. Consider the exports of two countries ( $q_1$  and  $q_2$ ).<sup>1</sup> Writing the

<sup>1</sup>This analysis is based on the discussion of Irving Morrissey, "Some Recent Uses of Elasticity of Substitution—A Survey," *Econometrica*, XXI (January, 1953), 41-62. See especially pp. 49-56.

demands for the exports of countries 1 and 2 as functions of prices and incomes, we have

$$(3.1) \quad q_1 = f(p_1, p_2, p_n, Y)$$

$$(3.2) \quad q_2 = g(p_1, p_2, p_n, Y)$$

where :

$p_1$  = price of country 1's exports

$p_2$  = price of country 2's exports in units of 1's currency

$p_n$  = price of all other commodities in units of 1's currency

$Y$  = world income in units of 1's currency.

Expressing (3.1) and (3.2) in logs and taking their total differentials, we can derive the following expression for the elasticity of substitution between  $q_1$  and  $q_2$ .

$$(4) \quad d \log q_1 - d \log q_2 = B_{12} d (\log p_1 - \log p_2) + (N_{1n} - N_{2n}) d \log p_n + (N_{1y} - N_{2y}) d \log Y$$

where :

$N_{1n}$  and  $N_{2n}$  are cross-price-elasticities of demand for  $q_1$  and  $q_2$  with respect to  $p_n$ .

$N_{1y}$  and  $N_{2y}$  are income elasticities of demand for  $q_1$  and  $q_2$ .

However, in this study elasticities of substitution are estimated by equations of the form

$$(5) \quad \log (q_1/q_2) = A + B \log (p_1/p_2).$$

Differentiating (5), we have

$$(6) \quad d \log q_1 - d \log q_2 = B_{12} d (\log p_1 - \log p_2).$$

Clearly it is appropriate to collapse (4) into (6) only if

$$(7.1) \quad N_{1n} = N_{2n}$$

$$(7.2) \quad N_{1y} = N_{2y}.$$

Equation (5) provides efficient and unbiased estimates of elasticities of substitution if (7.1) and (7.2) are fulfilled in the years under study. If (7.1) and (7.2) are not fulfilled, equation (5) is an inefficient estimating equation. However, the estimates obtained may still be unbiased. For the total exports of countries 1 and 2 the estimates are unbiased if  $p_n$  and  $Y$  are uncorrelated with the price ratio  $p_1/p_2$ . For individual commodity exports a further specification is required.

<sup>1</sup>The difference in the results for total manufactured exports compared with those for individual commodity exports may be "explained" in terms of (7.1) and (7.2). The use of well-defined individual commodity exports increases the likelihood that the world-income elasticities of demand for the compared exports of the two countries are of similar magnitudes and that the cross-price-elasticities are of similar magnitudes. As a result (7.1) and (7.2) are more likely to be fulfilled.

An elasticity of substitution for an individual commodity exported by countries 1 and 2 can be considered in two ways: (1) as a "devaluation" elasticity and (2) as a "non-devaluation" elasticity. In the definition of a "devaluation elasticity" the prices of the compared exports ( $p_{1c}$  and  $p_{2c}$ ) of the individual commodity vary proportionally with the prices of the other exports ( $p_{1x}$  and  $p_{2x}$ ) of countries 1 and 2,  $p_{1c}$  varying with  $p_{1x}$  and  $p_{2c}$  with  $p_{2x}$ . In the definition of a "non-devaluation" elasticity the prices of the other exports are held constant. Estimates of "devaluation" elasticities of substitution thus are unbiased if (1)  $p_{1x}$  is highly and positively correlated with  $p_{1c}$ , (2)  $p_{2x}$  is highly and positively correlated with  $p_{2c}$ , and (3)  $p_n$  and  $Y$  are uncorrelated with the price ratio  $p_{1c}/p_{2c}$ . Estimates of "non-devaluation" elasticities are unbiased if (1)  $p_{1x}$  is uncorrelated with  $p_{1c}$ , (2)  $p_{2x}$  is uncorrelated with  $p_{2c}$ , and (3)  $p_n$  and  $Y$  are uncorrelated with the price ratio  $p_{1c}/p_{2c}$ .

Although the primary interest of this study is to evaluate the effectiveness of devaluations, the estimates in Table 1 may not be estimates of "devaluation" elasticities, but rather may be biased upward in absolute value and more nearly measure "non-devaluation" elasticities of substitution. In other words, the estimates in Table 1 may not only measure substitutions between compared exports; they may also measure substitutions between similar exports of the United Kingdom or between similar exports of the United States.

A rough empirical test to determine whether the estimates in Table 1 are biased upward is provided by correlating the price ratios of compared exports with the price ratios of similar exports. High, positive correlations between such price ratios are evidence that changes in the prices of similar exports of the United States are substantially proportional to each other, that changes in the prices of similar United Kingdom exports are substantially proportional to each other, and, as a consequence, that the estimates of elasticities of substitution may not be biased upward by substitutions between similar exports. Fourteen correlations between such price ratios are computed accounting for twenty-one of the thirty-nine commodities in Table 1. All fourteen correlations are positive and significantly different from zero at the 2 per cent level (Table 2). These high, positive correlations

thus suggest that the estimates in Table 1 are estimates of "devaluation" elasticities of substitution.

**TABLE 2**  
CORRELATIONS BETWEEN PRICE RATIOS OF COMPARED  
EXPORTS AND PRICE RATIOS OF SIMILAR EXPORTS OF  
THE UNITED STATES AND THE UNITED KINGDOM

Commodities	r
Pig Iron/Iron and Steel : Plates and Sheets ... ..	.757
Pipes, Tubes, and Fittings/Iron and Steel : Plates and Sheets ... ..	.739
Razor Blades/Iron and Steel : Plates and Sheets ... ..	.777
Iron and Steel : Plates and Sheets : Galvanized/Plain ... ..	.569
Iron and Steel : Plates and Sheets : Galvanized/Black ... ..	.724
Iron and Steel : Plates and Sheets : Galvanized/Tinned and Tinned ... ..	.874
Automobiles and Chassis/Motorcycles ... ..	.893
Automobiles and Chassis/Electricity Generators ... ..	.646
Brass Tubes/Copper Manufactures : Rods ... ..	.642
Copper Manufactures : Ingots and Bars/Pig Iron... ..	.604
Copper Manufactures : Wire (Bare)/Iron and Steel : Wire Manufactures ... ..	.680
Cotton Cloth : Bleached and Colored/Unbleached ... ..	.586
Cotton Cloth/Woolen Fabrics ... ..	.586
Cotton Cloth/Cotton Yarn ... ..	.578

The estimates in Table 1, in addition, do not appear to be biased by correlations between world income and the ratios of United Kingdom export prices to United States export prices. During the years 1921-1938 major changes in the ratios of United Kingdom to United States export prices resulted from variations in these countries' exchange rates. These variations were largely independent of changes in world income, although in the 1930's the exchange rates were affected, but not directly, by the changes in world income. Statistically significant correlations between world income and the ratios of United Kingdom to United States export prices, therefore, seem unlikely.



How are the estimates of the "devaluation" elasticities of substitution for individual American and British exports to be interpreted? Formal conditions for stability in the balance of payments and exchange rate of a country on a gold standard or with a flexible exchange rate can be stated in terms of import and export demand elasticities. A *sufficient* condition for stability is that the sum of the elasticities of a country's demand for imports and of the foreign demand for its exports exceeds 1 in absolute value.<sup>1</sup> Other factors can be taken into account in the formulation of stability conditions.<sup>2</sup> The value of 1 serves, however, as a convenient "benchmark" against which to compare estimated elasticities of demand.

Estimates of "devaluation" elasticities of substitution can be translated into estimates of "devaluation" elasticities of demand by means of the formula:<sup>3</sup>

$$(8) \quad N_{1d} \approx \frac{V_2}{V_1 + V_2 + V_r} \hat{B}_{12} + \frac{V_r}{V_1 + V_2 + V_r} \hat{B}_{1r}$$

where:

$N_{1d}$  is the "devaluation" elasticity of demand for country 1's export of a commodity

$V_1$ ,  $V_2$ , and  $V_r$  are the respective values of country 1's, country 2's, and the rest-of-the-world's exports of the commodity

$\hat{B}_{12}$  is the estimated elasticity of substitution between country 1 and 2 for the commodity

$\hat{B}_{1r}$  is the estimated elasticity of substitution between country 1 and the rest of the world for the commodity.

<sup>1</sup>Lloyd A. Metzler, "The Theory of International Trade," *A Survey of Contemporary Economics*, ed. by Howard S. Ellis (Philadelphia: The Blakiston Company, 1948), pp. 225-228. The condition shown above is a simplified restatement of Metzler's formula of the stability condition for a country's balance of payments. His formula is expressed in terms of the elasticities of demand for imports of two countries and the elasticities of supply of exports of these two countries.

<sup>2</sup>See A. O. Hirschman, "Devaluation and the Trade Balance: A Note," *The Review of Economics and Statistics*, XXXI (February, 1949), 50-53; and Arnold C. Harberger, "Currency Depreciation, Income, and the Balance of Trade," *The Journal of Political Economy*, LVIII (February, 1950), 47-60.

<sup>3</sup>See Appendix A for the derivation of this formula.

The estimates of elasticities of demand obtained with (8) are approximations since the effects of substitutions between the commodity under consideration and commodities exported by other countries are excluded in deriving (8).<sup>1</sup> As a result such estimates may understate (in absolute value) the "true" elasticities of demand. In addition, the elasticities of demand computed from (8) are "devaluation" elasticities. Equation (8) is derived on the assumption that changes in the price of one of a country's exports are proportional to changes in the prices of other exports of the country.<sup>2</sup>

Estimates of "devaluation" elasticities of demand ( $N_{1d}$ ) for exports of the United Kingdom and the United States are shown in Table 3. They are computed from equation (8) on the assumption that elasticities of substitution for the United Kingdom and the United States *vis-a-vis* other exporters are equal to United Kingdom/United States elasticities of substitution.<sup>3</sup> On this assumption, formula (8) becomes

$$(9) \quad N_{1d} \approx \left(1 - \frac{V_1}{V_1 + V_2 + V_r}\right) \hat{B}_{12}.$$

In calculating the estimates in Table 3, 1937 value weights are used. The estimates of the elasticities of substitution ( $\hat{B}_{12}$ ) are the coefficient-of-variation estimates, since those estimates are intermediate in magnitude to the lower- and upper-limit estimates.

Of the seventy-four estimates of "devaluation" elasticities of demand for exports shown in Table 3 (thirty-seven each for the United Kingdom and the United States), all but four exceed 1 in absolute value. More than two-thirds of the estimates (twenty-four for United Kingdom exports and twenty-seven for United States exports) exceed 2 in absolute value. The estimated elasticities of demand for the United Kingdom and for the United States do not cluster around central values. Differences in the size of the estimates appear to be consistent with differences in the characteristics of the commodities. Lower estimates are associated with more specialized commodities (*e.g.*, electricity generators); higher estimates, with less specialized commodities (*e.g.*, copper plates and sheets).

<sup>1</sup>See Appendix A, equations (21) through (25).

<sup>2</sup>See Appendix A, equation (21).

<sup>3</sup>Further empirical work is required to determine the values of the actual elasticities of substitution *vis-a-vis* other countries.

TABLE 3

ESTIMATES OF "DEVALUATION" ELASTICITIES OF DEMAND  
FOR UNITED STATES AND UNITED KINGDOM EXPORTS (1921-1938)

Commodity (1)	United States		United Kingdom	
	Share of World Market (2)	Elasticity of Demand (3)	Share of World Market (4)	Elasticity of Demand (5)
Chemicals				
Aluminum Sulphate(a) ...	17.3%	-2.46	15.2%	-2.52
Fertilizers ...	10.4%	-1.22	9.8%	-1.23
Ammonium Sulphate(b) ...	10.4%	-4.95	9.8%	-4.98
Sodium Compounds ...	17.3%	-1.79	15.2%	-1.84
Caustic Soda ...	17.3%	-2.66	15.2%	-2.73
Iron and Steel				
Pig Iron ...	27.7%	-2.50	18.5%	-2.82
Plates and Sheets ...	27.7%	-2.38	18.5%	-2.68
Galvanized ...	27.7%	-1.74	18.5%	-1.96
Plain ...	27.7%	-2.22	18.5%	-2.50
Black ...	27.7%	-2.30	18.5%	-2.59
Tinned and Terner ...	27.7%	-3.93	18.5%	-4.43
Pipes, Tubes, and Fittings ...	27.7%	-2.70	18.5%	-3.05
Railway Materials(c) ...	27.7%	-1.41	18.5%	-1.59
Railway Tracks ...	27.7%	-2.65	18.5%	-2.98
Razor Blades(d) ...	Not computed since correlation for elasticity of substitution is positive			
Wire Manufactures ...	27.7%	-2.24	18.5%	-2.53
Machinery and Vehicles				
Automobiles and Chassis ...	47.7%	-1.18	19.2%	-1.82
Electricity Generators(c) ...	32.2%	-0.79	26.6%	-0.86
Motorcycles ...	47.7%	-3.26	19.2%	-5.03
Radio Sets(e) ...	32.2%	-2.98	26.6%	-3.22
Radio Tubes(f) ...	32.2%	-0.89	26.6%	-0.96
Sewing Machines(c) ...	32.2%	-1.27	26.6%	-1.38
Nonferrous Metals				
Brass Tubes(c) ...	17.7%	-3.52	11.4%	-3.79
Copper Manufactures ...	17.7%	-4.92	11.4%	-5.30
Ingots and Bars ...	17.7%	-10.51	11.4%	-11.31
Plates and Sheets ...	17.7%	-3.22	11.4%	-3.46
Rods(c) ...	17.7%	-4.50	11.4%	-4.85
Wire (Bare) ...	17.7%	-5.69	11.4%	-6.12
Nickel(c) ...	17.7%	-1.85	11.4%	-1.99
Nonmetallic Minerals				
Cement ...	18.8%	-2.28	14.7%	-2.40
Gasoline ...	39.7%	-4.85	21.4%	-6.33
Glass, Plate and Sheet ...	Not computed since correlation for elasticity of substitution is positive			
Lubricating Oil ...	39.7%	-1.35	21.4%	-1.76
Textiles				
Cotton Cloth... ...	3.4%	-2.24	34.8%	-1.51
Bleached and Colored ...	3.4%	-2.15	34.8%	-1.45
Unbleached ...	3.4%	-3.73	34.8%	-2.52
Cotton Yarn ...	1.7%	-2.59	36.7%	-1.66
Jute Bags(c) ...	3.4%	-3.18	34.8%	-2.15
Woollen Fabrics ...	3.4%	-3.98	34.8%	-2.69

(a)1925-1938

(b)Excluding 1926

(c)1922-1938

(d)1930-1938

(e)1931-1938

(f)1927-1938

The "devaluation" elasticity of demand for the total exports of a country can be obtained by taking a weighted average of the "devaluation" elasticities of demand for the individual commodities comprising total exports. A look at the estimates in Table 3 suggests that the elasticities of demand for the total exports of the United Kingdom and the United States may be in the neighbourhood of  $-3$ . Elasticities of this magnitude are likely to make moderate devaluations effective in correcting balance-of-payments deficits.

### Appendix A

The derivation of equation (8) for translating estimates of "devaluation" elasticities of substitution into estimates of "devaluation" elasticities of demand is shown in this appendix. With real income assumed to be constant, Hicks demonstrates that<sup>1</sup>

$$(10) \quad \sum_{i=1}^n v_i N_{ij} = 0 \quad (j = 1, 2, 3, \dots, n)$$

where :

$v_i$  = value of commodity  $i$

$N_{ij}$  = price-elasticity of demand for  $i$  with respect to the price of  $j$ .

Consider the case of a commodity exported by countries 1 and 2 and by the rest of the world. Let us designate their exports of the commodity as commodities 1, 2, and 3, respectively. Commodity 4 is taken to represent all the other exports of country 1. Rewriting (10) and taking the elasticities with respect to the price of commodity 1 ( $p_1$ ), we have

$$(11) \quad v_1 N_{11} + v_2 N_{21} + v_3 N_{31} + v_4 N_{41} + \sum_{i=5}^n v_i N_{i1} = 0.$$

Our estimating equation (2) p.3 gives—

$$(12) \quad d \log q_1 - d \log q_2 = B_{12} d \log p_1 - B_{12} d \log p_2$$

If we assume world import demand equations are of the form:

$$(13) \quad g_1 = f_1(p_1 p_2 p_3 p_n y) \text{ we obtain by taking differentials :}$$

$$(14) \quad d \log q_1 - d \log q_2 = \sum_{i=1,2,3,n} (N_{1i} - N_{2i}) d \log p_i + (N_{1y} - N_{2y}) d \log y$$

On the assumption  $B_{12}$  is a constant our estimating equation implies :

<sup>1</sup>J. R. Hicks, *Value and Capital* (2nd edition ; Oxford : The Clarendon Press, 1946), pp. 309-312.



$$(15) \quad B_{12} = N_{11} - N_{21} = N_{22} - N_{12} \\ N_{11} = N_{21} \quad (1-3, n) \quad N_{1y} = N_{2y}$$

The same method applied to  $B_{13}$  gives :

$$B_{13} = N_{11} - N_{31} = N_{32} - N_{13} \\ N_{11} = N_{31} \quad (1-2, 1-n) \quad N_{1y} = N_{3y}$$

The assumptions contained in (15) and (16) are essentially the same as the conditions discussed on pages 38-39 relating to the effective estimation of elasticities of substitution. These assumptions do not appear to be implausible in view of the results obtained.

From (15) and (16) we obtain

$$(17.1) \quad N_{21} = N_{11} - B_{12}$$

$$(17.2) \quad N_{31} = N_{11} - B_{13}$$

Substituting (17.1) and (17.2) in (11), we have

$$(18) \quad v_1 N_{11} + v_2 N_{11} - v_2 B_{12} + v_3 N_{11} - v_3 B_{13} + v_4 N_{41} + \\ \sum_{i=5}^n v_i N_{i1} = 0.$$

Manipulating (18), we have

$$(19) \quad N_{11} = \frac{v_2}{v_1 + v_2 + v_3} B_{12} + \frac{v_3}{v_1 + v_2 + v_3} B_{13} - \frac{1}{v_1 + v_2 + v_3} \\ \left( v_4 N_{41} + \sum_{i=5}^n v_i N_{i1} \right).$$

Since we are deriving a formula for the "devaluation" elasticity of demand for commodity 1, we can set

$$(20) \quad v_4 N_{41} = 0.$$

A "devaluation" elasticity of demand by definition excludes the effects of substitutions with the other exports of country 1. Changes in the price of commodity 1 ( $p_1$ ) are defined to be proportional to changes in prices of the other exports ( $p_4$ ) of country 1; that is,

$$(21) \quad \frac{dp_1}{p_1} = \frac{dp_4}{p_4}.$$

Thus  $p_1$  cannot change relative to  $p_4$ , and we can rewrite (19) as

$$(22) \quad N_{1d} = \frac{v_2}{v_1 + v_2 + v_3} B_{12} + \frac{v_3}{v_1 + v_2 + v_3} B_{13} - \sum_{i=5}^n \frac{v_i}{v_1 + v_2 + v_3} N_{id}$$

with the price subscript "1" replaced by "d", reflecting the definition of a "devaluation" elasticity.

If we estimate  $N_{1d}$  from the formula

$$(23) \quad N_{1d} = \frac{v_2}{v_1 + v_2 + v_3} B_{12} + \frac{v_3}{v_1 + v_2 + v_3} B_{13},$$

$N_{1d}$  is underestimated in absolute value if

$$(24) \quad \sum_{i=5}^n \frac{v_i}{v_1 + v_2 + v_3} N_{1d} > 0$$

and overestimated in absolute value if

$$(25) \quad \sum_{i=5}^n \frac{v_i}{v_1 + v_2 + v_3} N_{1d} < 0.$$

The term  $\sum_{i=5}^n \frac{v_i}{v_1 + v_2 + v_3} N_{1d}$  is positive if the commodi-

ties 5, 6, 7, . . . , n are on balance substitutes for commodity 1; negative, if these commodities are on balance complements to commodity 1. The probable situation is one in which other commodities are on balance substitutes.  $N_{1d}$  is, therefore, likely to be underestimated by (23).

The formula shown in equation (8) is obtained from (23) by recognizing the approximation involved and by substituting the subscript "r" for "3". In addition, the "devaluation" elasticities of substitution ( $B_{12}$  and  $B_{13}$ ) are indicated as estimates.

## Appendix B

The principal sources of the data used in this study are: Great Britain, Board of Trade, *Statistical Abstract for the United Kingdom* (London: H.M. Stationery Office); Great Britain, Statistical Office of the Customs and Excise Department, *Annual Statement of the Trade of the United Kingdom with British Countries and Foreign Countries, Volume III* (London: H.M. Stationery Office); U.S. Bureau of Foreign and Domestic Commerce, *Foreign Commerce and Navigation of the United States* (Washington: Government Printing Office); U.S. Bureau of the Census, *Statistical Abstract of the United States* (Washington: Government Printing Office).

The exchange rates employed for converting export prices into dollars are yearly averages of "Foreign Exchange Rates on Cable Transfers, New York," published in the *Statistical Abstract of the United States*. The shares of the United States and the United Kingdom in world markets (Table 3) are computed from 1937 value data on the exports of thirty-two countries, published in League of Nations, Economic Intelligence Service, *International Trade Statistics, 1938* (Geneva : League of Nations).

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# An Indian View of the Expenditure Tax

## I.—INTRODUCTORY

Suggestions for innovations in public finance, more particularly in the domain of taxation policy, are perhaps the product of a transition<sup>1</sup> which the economic systems of most countries are experiencing at this moment. There are two basic factors which have influenced current economic thinking in this regard : first, the desire to promote egalitarian objectives ; and secondly, the need to accelerate economic growth, especially in the under-developed regions of the globe. Both considerations are such that no reasonable person could take exception to them ; yet the pursuit of these very objectives tends to create a piquant situation inasmuch as success on one of the fronts leads us to a logical failure on the other. It is perhaps a recognition of this conflict that in certain quarters conviction seems to be gaining ground that equitable distribution of wealth is a luxury which an under-developed country can ill-afford to attain.

It is in the panorama of such contradictions that Nicholas Kaldor places forward, with almost missionary zeal, the case for an expenditure tax.<sup>2</sup> In support of his thesis Mr. Kaldor quotes scriptures—from Thomas Hobbes to Mill, Marshall, Pigou, Keynes and Fisher—and utters in astonishment :<sup>3</sup> "There can be few ideas in the field of economics which are so revolutionary in their implications and yet can look back on so respectable an ancestry." Mr. Kaldor draws inspiration from this rich heritage—from Hobbes' idea that the commonwealth is defrauded by the luxurious waste of private men ; from Mill's advocacy of the exemption of savings ; from Marshall's casual recognition of the

<sup>1</sup>For a fuller discussion of this point, see my paper, "Taxation Policy in a Transitional Economy," *Indian Journal of Economics*, Special Number on "Fiscal and Monetary Policy" in honour of the late Lord Keynes, No. 144, July, 1956, pp. 3-16, issued by the Departments of Economics and Commerce, University of Allahabad.

<sup>2</sup>See *An Expenditure Tax* by Nicholas Kaldor (University of Cambridge), George Allen & Unwin Ltd., 1955. London, Also see *Indian Tax Reform*, Report of a Survey by Nicholas Kaldor, issued by the Department of Economic Affairs, Ministry of Finance, Government of India, New Delhi, 1956.

<sup>3</sup>*An Expenditure Tax*, *op. cit.*, p. 11.



superiority of a spendings tax system ; and from Keynes' acceptance of its theoretical soundness. It is interesting to find Mr. Kaldor defending the casual observations made by that respectable ancestry, not deterred in the least by the fact that Marshall dubbed the taxation of personal expenditure a "Utopian goal" ; that Pigou smelled in it enormous possibilities of dishonesty and evasion ; and that Keynes, with all the prophetic foresight at his command, considered the expenditure tax a practical impossibility.

## II.—THE RATIONALE OF TAXING SPENDINGS

### (A) *Equity and Egalitarianism :*

At the outset we have to see if the taxation of personal expenditure is a fairer principle than the taxation of personal income. Now, it is generally accepted that the raising of public revenues should be guided by the touchstone of "least aggregate sacrifice". Again, it is a matter of common experience that wage-earners and salary-earners feel happy on pay day. In the normal course, it is at this moment that a personal tax would appear to be the least burdensome. Although businessmen and professional people have no fixed pay days, they too have the *least grudge* in paying direct taxes at a time when they are having good incomes. Farmers feel likewise ; they have the least hesitation in meeting taxes and other personal obligations at harvest time. Thus if income tax is deducted from earnings it does not mean *much reduction* in people's happiness since they tend to consider the net amounts received (or left after taxation) as their *effective* earnings. On the contrary, once the gross resources are in the hands of the tax-payer, the levy of an expenditure tax would involve, in psychological terms, a major sacrifice. This psychological injury may be too deep to be healed by *possible* economic advantages of deferred payment of tax (which, in certain quarters has been compared to an interest-free loan). The very idea of having to meet some obligations at a future date may hang like the Sword of Damocles over the heads of many ; and even the purely economic advantages may not be realized in the event of a rise in tax rates.

It is true that expenditure tax *can* be deducted from personal incomes just like income tax under the Pay-As-You-Earn scheme. But this formula would not suit a person who intends to consume

his income (say) twenty years after the year of earning. Further, the "deduction of tax at source" would clearly be a misnomer since the basis of an expenditure tax, in principle, is spendings and not earnings ; and the tax falls due to the State only when a person spends something. Moreover, under the spendings tax system it is not possible to deduct tax at source in the case of people who, in the absence of current incomes, meet their current expenditure out of accumulated fortunes (and it is these people who are the main target of Mr. Kaldor's scheme). In the case of income tax these difficulties do not arise. Not only this, the inapplicability of the expenditure tax to corporations, business firms and other institutions underlies the inherent superiority of income taxation.

To return to individual incomes and expenditure, it has already been argued that, normally, the tax-payers would be subjected to least sacrifice only if the personal tax is levied on the basis of earnings and at the time when income is earned. To illustrate this general statement we could take three examples—the case of a person who spends, in a certain period of time, more than his current income ; a person who spends just what he earns ; and a person who spends less than his current earnings.

In the first case, expenditure tax might easily aggravate the (already) miserable plight of the tax-payer. It may be that he has met his increased expenditure through borrowings. He may have been forced to borrow owing to pressing necessities or misfortunes—costly weddings and other religious and social ceremonies (particularly in India and other countries of the East) ; prolonged illness or disability ; deaths and funerals ; heavy losses through fire, floods, burglary or pickpocketing ; costs of litigation and fines ; and the agonies of unemployment, underemployment, business failures and depressions. Would it not be a case of tyranny and callousness if the fiscal gods chose to tax helpless victims in such circumstances ?—and to compel them to borrow further amounts to meet their tax obligations !

Even when current expenditure has been met out of accumulated fortunes, one cannot definitely assert that the position is a happy one. The lot of a retired salaried employee or wage-earner (or an unemployed person) who draws every week on his bank

balance (built out of provident fund, gratuity fund or past earnings) to keep body and soul together is certainly not enviable.<sup>1</sup> He has perhaps already reduced his standard of living to the minimum consistent with his previous status and position in society. Maybe, due to old age and feeble health, he has to spend increasingly large amounts of money to meet the physicians' bills (or to meet the cost of servants or certain dependents who look after him). In what way do we meet considerations of equity if we harass such a person by imposing an expenditure tax?<sup>2</sup>

Let us now take the second case, that of a person whose spendings just balance his earnings. For such a person the spendings tax has nothing to offer since his tax liability would be of the same order in either case. In addition, there is a likelihood that the expenditure tax may put him in difficulty. He may fail to make provision for the actual payment of tax as neatly as is possible under income taxation. The difficulty may be resolved by paying expenditure tax for the current year out of next year's income, and then always with a year's time lag (as businessmen do in case of income tax). Even then, the expenditure tax has nothing to commend itself over the income tax in this case.

Finally, we come to the category of persons who spend less than their current income. For Mr. Kaldor, these alone are the virtuous people who deserve to be treated leniently. But while recommending soft treatment for this class of foresighted persons, who save for the rainy day, Mr. Kaldor forgets that these very persons will be called upon to pay tax on their accumulated fortunes when they proceed to dissave on "rainy days". Benevolence, which has to be paid for by enduring harshness in the days of distress, is not really worth the bargain.

Mr. Kaldor holds that one of the attributes of a good tax is that it should not interfere with the pattern of consumption and the scale of personal choices. He goes on to claim that a tax on personal expenditure possesses this attribute. But in the same

<sup>1</sup>If the expenditure tax is entirely to replace the present structure of income tax, it is evident that the exemption limit will have to be placed *very low* in order to maintain State revenues at the existing level.

<sup>2</sup>People who have already saved on the old basis (income tax already paid) may face considerable difficulty on the introduction of an expenditure tax, in spite of the taxing authority treating them leniently.

breath he suggests that a tax on spendings is designed to curtail the consumption of luxury goods.

Now the first claim could stand only if (i) there is no exemption for any class of expenditure (whether capital or revenue, necessitous or luxurious) ; and (ii) if all consumption goods which are substitutes have the same price. In the absence of these two factors (of which no mention has been made by Mr. Kaldor) the tax on spendings would cease to be neutral. Thus, if exemption exists in respect of a particular class of expenditure, there would be a tendency to divert expenditure from chargeable items to exempted heads. Similarly, if the prices of substitutable consumption goods differed, and the rates of taxation are progressive in nature (as they inevitably must be), the pattern of consumption could easily be distorted at the margin. In general, there may be a discrimination against consumers' durables for the following reasons :—

(i) Their purchase may have the effect of putting the assessee in a higher tax bracket. A bundle of small-priced consumer goods may also have the same effect, but the assessee may not be conscious of the fact when sums are spent in small dribblets.

(ii) If the consumer is allowed to spread over expenditure incurred on durable goods the conditions and the period allowed may not be satisfactory. Mr. Kaldor stands for a 5% charge (spread over 20 years) but under the Expenditure Tax Act of 1957, in India, spreading over cannot go beyond five years.

(iii) It may be easier to conceal expenditure by spending on foods and drinks rather than purchasing some durable consumption goods.

It is true that in certain cases luxury consumption may be discouraged *at the margin*. Suppose a person has already spent £9,800, and at the end of the year he thinks of owning a conveyance. If the rate of expenditure tax up to £10,000 is 100% and 150% thereafter, the choice of the assessee may be tampered with. The market price of a motor car may be £1,000 and that of a motor cycle £200. On these terms (expenditure tax being ignored) he may prefer to buy the motor car (if it gives just a little over five times the utility of a motor cycle). But taking into account the tax on spendings, the effective cost of a motor car would be £2,400, and that of a motor cycle £400, so that he would buy the



latter. Here, it may be claimed that luxury consumption has been curtailed. But this obviously need not always happen. The motor car might have been purchased at the very beginning of the year ; thereafter unforeseen needs might have arisen. In such a case the axe would have been applied not to luxury consumption, but to articles of basic necessity.

Again the expenditure tax would discriminate heavily against salaried employees (including civil servants) and in favour of businessmen, because a businessman with an income of £5,000 per year can live as shabbily as a street hawker, but a senior civil servant drawing £5,000 annually must spend heavily to maintain his status in the administrative hierarchy. Thus under a spendings tax system the misers would be at a premium ; while people who have to spend heavily on account of conventional necessities or their personal misfortunes would be penalized severely. This runs counter to the basic principle of public finance that, other things being equal, a miser could be taxed much more heavily than others.

*(B) Incentives and Economic Growth :*

Mr. Kaldor is perhaps on the best ground when he claims for his expenditure tax the virtue of encouraging savings. He asserts that "incentives today are more important than the need to avoid distortions in the pattern of spending" (thus indirectly conceding that an expenditure tax may tamper with the scale of personal choices, thereby leading to a diminution in individual welfare). Mr. Kaldor suggests that a tax on expenditure does not discriminate against either saving or risk bearing and that it is a more efficient instrument in relation to Keynesian economics and in the interest of economic stability and progress. It is this part of his thesis which has lured *some* economists and *many* a politician.

The first pertinent question which we must pose is this : why do we save? Does it merely satisfy our craze for accumulation or the instinct of ownership? If that be so, it has already been conceded that an expenditure tax will be a paradise for the misers. But how does miserliness encourage economic growth? Saving and risk bearing are not identical. Resources which are hoarded, *i.e.*, which are utilized neither for investment nor for consumption

do not help the society ; they only impede the process of economic growth.

Now, if we do not save to satisfy our craze, we may be saving (a) to augment our investments for further production, or (b) to provide for a rainy day. In case (a) it can again be questioned why we wish to produce more. Is it out of patriotic sentiment? Probably not, at least in the case of private enterprise. In general, the guiding motive of higher production is higher personal consumption. If higher personal consumption is not permitted, the incentive to produce more simply does not exist, and the desire to save is weakened. Case (b) has already been discussed above in Section II(A). It has been shown that an expenditure tax would cause a great deal of annoyance to those who save with the intention of dissaving on rainy days.

There are other pertinent factors which seem to have been ignored by those who feel that an expenditure tax is bound to promote savings. Institutional savings are an important part of a nation's savings. Let us take life insurance : will this form of saving increase because an expenditure tax has been introduced? No. On the contrary, there is a danger that life insurance may become less popular with the assessee. Under income taxation an assessee has to pay no tax on that part of his income which is utilized for paying insurance premia (within certain limits, of course). Again, when an insurance policy matures, the amount received by the assessee is outside the purview of income tax. So is the case with provident funds. Under an expenditure tax while the annual premiums or contributions may be exempt, lump sum receipts in future will form the basis of spendings tax. An expenditure tax thus discourages thrift.

Let us now examine the contention that an expenditure tax is conducive to entrepreneurship. The idea of entrepreneurship is that one must be able to face losses in the hope of ultimate gains. The period of losses is generally the breaking point of entrepreneurship. If the State at all intends to help private enterprisers, and to improve their sustaining capacity, it should provide relief in the hours of distress. Under income taxation this relief comes at the right moment in the shape of "no taxation". But since expenditure cannot be altogether eliminated even in lean

years, tax liability may still arise. Mr. Kaldor's plea for a reduction in the rate of income tax applicable to joint stock companies may be a welcome idea, but it does not support an expenditure tax.

Coming to the nationalized sector, it is easy to see that the spendings tax would hit hard the members of the civil service and those of public corporations. It has already been shown that the expenditure of salaried employees in general, and civil servants in particular, tends to be rigid. Further, fewer opportunities are available to such persons for tax evasion. A tax on expenditure would, therefore, have a disincentive effect on public enterprises.

### *(c) Evasion and Administrative Questions*

Granted that large-scale tax evasions are taking place under the present-day system of income taxation, the plain question is this : Is there reasonable ground to suppose that the extent of evasion would be less under the spendings tax system?

It is easy to see that the possibilities of tax evasion would be infinitely greater under a spendings tax system. The whole structure of expenditure tax administration as propounded by Fisher, and endorsed with certain modifications by Kaldor, rests on the income of the taxpayer. Mr. Kaldor starts with income (which includes all kinds of gifts) ; adds borrowings and lendings repaid ; deducts lendings and borrowings repaid ; makes some allowance for "necessitous expenditure", investment outlays and the spreading of consumers' capital expenditure over a number of years ; and arrives at a hypothetical figure of personal expenditure. The assessee, as a rule, is not required to submit any details of his personal expenditure. So, if income can be concealed, expenditure to that extent is *automatically* concealed. This means that the possibilities of tax evasion under an expenditure tax *are at least as great* as under income tax.

Not only this, evasion can be practised by producing bogus certificates regarding medical expenses and such other necessitous expenditure for which exemptions may be provided under the spendings tax system. Mr. Kaldor's "self-checking" device would not work because the certificates of expenses may be obtained from shopkeepers and professional men whose incomes (and expenses) are too low to be taxed. In India, where hardly 1% of

the population falls within the orbit of personal taxation, there are enormous possibilities for such manipulations. Even in Britain, where direct taxation is applied to 70% of the population, there are still 30% of the people available for alliances aimed at evasion.

Moreover, since the expenditure tax system suggested by Mr. Kaldor is based on the quotient system applied to income taxation in France, there is scope for putting distant relations as members of the family so that the expenditure per head will appear to be much less. The higher the rate of expenditure tax, the greater would be the incentive to perpetrate such frauds. Here again, the self-checking system of Mr. Kaldor will fail because the relations taken in as family members may be paupers who have small or no personal incomes.

In case gifts and donations are not treated as chargeable expenditure, there may be a strong tendency for rich men to transfer some of their resources to poor friends and relatives. No doubt, such a development may be socially desirable. But that it is the product of tax evasion cannot be denied. Moreover, the gifts and donations may be made on the implicit understanding that some of the expenditure bills of the donors will be met by the donees. Evasion could also be practised by borrowing secretly and spending out of these borrowed amounts (in the short run); or still better, by showing bogus loans in favour of people outside the tax orbit. Ultimately, it could be declared that these lendings (in the latter case) had become bad debts. Further, under an expenditure tax, there may be increased temptations to camouflage personal expenditure under the garb of business or official expenses.

In support of his thesis that an expenditure tax is less amenable to tax evasion, Mr. Kaldor suggests that a person with an annual expenditure of £50,000 could not possibly put it at £5,000. But such a case could arise only if a person had concealed his receipts to the extent of £45,000. Mr. Kaldor commits a fallacy when he says that large incomes can be concealed whereas chargeable expenditure (which is merely an adjusted figure of these incomes) cannot be concealed. A person who has accumulated large fortunes through black market operations or through tax evasion would not consume his resources in ways that can be



easily detected. He would be extremely careful in this regard *whether the expenditure tax is in existence or not*. The fear of the present Income Tax Officer is perhaps as great as that of the prospective Expenditure Tax Officer. In fact the two roles will be played by the same set of public officials. A mere change of name should be hardly material.

The new tax would only bring about a legion of administrative difficulties. At present the income tax returns of individuals (as against business firms), particularly salaried persons, are extremely simple. There are no carry-forwards from year to year. But under an expenditure tax even these returns would become complicated: there will be the need to carry forward unusual spendings, like marriage expenses, purchases of durable goods like motor cars, etc. With a 5% charge suggested by Mr. Kaldor the process may go on for no less than twenty years. Even if an assessee is given the option of spreading his expenditure only over five or ten years, the whole procedure may be not only irksome for the taxing authority, but also exasperating for the assessee himself. Again, these long-term adjustments may have the effect of making public revenues more uncertain than they are at present.

An expenditure tax would involve a recurring loss to the State on account of postponement of tax liability in many cases. On the other hand, it would be necessary to effect a considerable increase in the existing staff of income tax authorities. This would inflate the costs of administration. Even then, assessments under an expenditure tax would tend to be much more arbitrary. What is there to prevent the negotiation of faked deals—purchases, sales, borrowings, lendings, repayments, etc.—in collusion with people who are outside the purview of personal taxation? What means are available to the taxing authority for unearthing credit purchases, or even cash expenses on costly foods and drinks? Will the retail stalls be licensed and made to keep a record of every petty transaction? Will there be surprise inspections of retail shops and household effects? Mr. Kaldor has the good sense not to suggest such ludicrous errands. But he does feel tempted to embark on demonetization as a solution for the problem of hoarding. Demonetization is a harsh deed, and yet only a partial remedy. It may bring out hoards of coins and currency notes, but not gold and jewellery.

Even capital gains may be concealed by manipulating on paper the price of the assets sold. Mr. Kaldor tries to exclude such a possibility by saying that it would be opposed to the interests of the purchaser, who may thereby subject himself to a larger amount of capital gains tax at a later date. But the property may be sold in small dribbles to a large number of purchasers, and these purchasers may have nothing to fear from the capital gains tax. Alternatively, these purchasers, too, in their turn may manipulate the prices on paper. Thus, A might have purchased a certain property for £10,000. He may sell it to B for £12,000, but on paper the price may be shown at £10,000. B may sell it to C for £14,000, while the price on paper may still be shown at £10,000.

Mr. Kaldor's plan to induce an opposition of interests between various parties is naive, if only because the average tax evader is likely to be rather cleverer than the average tax reformer; and the most skilful tax evader is certainly head and shoulders above the shrewdest tax reformer. Thus, tax evasion under the spendings tax may assume monstrous proportions. Even Mr. Kaldor, at one stage, concedes the possibility of a completely "phoney" set of comprehensive accounts being maintained for purposes of tax evasion.

While the new tax is essentially based on the old conception, Mr. Kaldor has no hesitation in condemning outright the taxation of income—the "inherent arbitrariness or immeasurability in the very notion itself which no amount of legislative revision or refinement could hope to eliminate".<sup>1</sup> But, if income itself is indeterminate, anything which takes income (maybe incomes of all kinds) as the *starting point* is clearly vague and arbitrary. Mr. Kaldor bewails the fact that the definition of income is a result of administrative compromises. But where is the guarantee, or even a reasonable hope, that such compromises would not arise in the administration of an expenditure tax?

### III—THE EXPENDITURE TAX IN INDIA

India is the first country to have launched an experiment on the expenditure tax. The Expenditure Tax Bill was passed by the *Lok Sabha* (House of People—lower house of the Indian Parliament comparable to the British House of Commons) on September

<sup>1</sup>*An Expenditure Tax*, loc. cit., p. 25.

4, 1957. This tax will be levied for the first time during the assessment year 1958-59 on the expenditure for the year ending March 31, 1958. The tax, so to say, will come into force on April 1, 1958. In the first instance it is likely to affect only 8,000 assesseees.

It is interesting to observe that administrative compromises have figured prominently from the very beginning. In his budget proposals of May 15, 1957, the Finance Minister of India, Mr. T. T. Krishnamachari, proposed an Expenditure Tax to be levied on the "slab system on individuals and Hindu undivided families with income not less than Rs 60,000" (£4,500). This itself was a compromise with income taxation, *i.e.*, persons who spent recklessly out of accumulated fortunes (the main eye-sore for Mr. Kaldor) were not to be touched. The Select Committee of the *Lok Sabha* restricted "the liability to expenditure tax to only such persons whose net income from all sources *after the payments of taxes* exceeds Rs 36,000" (£2,700) and this was finally accepted by the House. The Committee admitted "that this provision is necessary to prevent harassment to assesseees and to make the administration of the Act somewhat easier".

Mr. Kaldor is undoubtedly the godfather of the expenditure tax in India, though the whole thing could not have been brought forth so early but for the quick conception and receptiveness of Mr. T. T. Krishnamachari, India's Finance Minister. Between January 1956 and March 1956 (barely a period of ten weeks) Mr. Kaldor carried out a review of the Indian tax system, though a comprehensive report of the Taxation Enquiry Commission (1953-54) had appeared only a year before (1955). That Mr. Kaldor addressed himself to such a formidable task in such a narrow space of time, gives evidence of his devotion and determination; but that he hastened to pronounce a revolutionary verdict and to prescribe far-reaching changes in the Indian tax system on the basis of such a tentative, imperfect and statistically deficient study, does not speak so well of an economist of his stature.

Mr. Kaldor's five main recommendations with regard to the structure of personal taxation were as follows :—

(a) Income Tax rising to a maximum rate of 45% on incomes exceeding Rs 25,000 (£1,875).

(b) Annual Tax on wealth rising from  $\frac{1}{8}\%$  on a personal net worth of Rs 100,000 to a maximum rate of  $1\frac{1}{2}\%$  on capital assets exceeding Rs 1,500,000 (£112,500).

(c) Personal Expenditure Tax rising from 25% on personal outlay in excess of Rs 10,000 (£750) per annum per adult (infants counting as half) to a maximum rate of 300% on a net personal expenditure of Rs 50,000 (£3,750) per head.

(d) General Gift Tax payable on gifts in excess of Rs 10,000 (£750) for any single recipient of gifts (the donee) and taxed at a rate depending on the total net worth of the recipient (as ascertained for annual wealth tax) at the rate of 10% if the net worth is below Rs 100,000 (£7,500), and thereafter at rates ranging from 15 to 80% depending on the net worth of the recipient, the maximum rate being reached where the total estate including the gift exceeds Rs 4,000,000 (£300,000).

(e) Capital Gains Tax (on all realised gains) at the same rate as Income Tax (*viz.*, rising gradually to the maximum rate of 45%—or more precisely, seven annas in a rupee (Rupee = 16 annas = 100 *Naya Paise*)—when income including capital gains exceeds Rs 25,000. Capital gains, so to say, are to be treated as ordinary income.

Four of the five recommendations have already been accepted (in principle, not in detail) by the Government of India ; it is only the first one which has gone by default. The maximum rate of income tax along with super-tax and surcharge in India stood at 91·9% (on incomes exceeding Rs 150,000) during the financial year 1956-57. The budget proposals for 1957-58 stipulated a maximum rate of 84%. This relief may have been effected under the influence of Mr. Kaldor's proposals. But the extent of relief is really small, particularly when we consider that the maximum rate during the year 1955-56 was about that level (86·6%). Thus, while an expenditure tax has been introduced, income tax rates have *not* been substantially lowered as suggested by Mr. Kaldor. The difficulty with Finance Ministers is that, while they are always keen to embark on fresh measures of taxation, they are sadly reluctant to give up existing sources of revenue.



A similar case in point is the Wealth Tax Act which was passed by the *Lok Sabha* on August 29, 1957.<sup>1</sup> With the introduction of Wealth Tax, the Estate Duty Act of 1953 ought to have been repealed. But there is no sign that this will happen.

At this stage it may be pertinent to draw attention to an inconsistency between Mr. Kaldor's book on The Expenditure Tax and his Report on Indian Tax Reform. In the former he had suggested: "I do not believe, however, that if a change-over to the expenditure basis of taxation were possible, there would be a sufficient case left for an annual tax on capital to surmount the serious administrative problems involved." In the latter, on the contrary, he advocated the levy of Wealth Tax side by side with Expenditure Tax. This has created a serious problem. Whatever bias an Expenditure Tax could have in favour of savings would now stand largely negated. Taxing authorities may have the satisfaction that, through skilful rate manipulations in both cases, the situation can be rendered less absurd. But no amount of rate manipulation can undo the basic inconsistency.

From the viewpoint of egalitarianism, the Wealth Tax scores heavily over the Expenditure Tax. At the same time the former has fewer possibilities of tax evasion. Considering the financial needs of the Government of India for the implementation of the Second Five-Year Plan (1956-61), none of the new taxes (not even all of them put together) can fill the "uncovered gap" substantially, the gap (in addition to deficit financing of a similar magnitude) being easily of the order of Rs 1,200 crores (£900 million). The Expenditure Tax, according to the "guesswork" of the Finance Minister *may* fetch Rs 4 crores (£3 million). Even this may be an over-estimate: the Finance Minister was somewhat diffident; he thought that the yield would not in any case be lower than one crore of rupees (£750,000). Is then the game really worth the candle, particularly when it is so bad from the viewpoints of equity and administration?

<sup>1</sup>In case of individuals, the exempted limit is Rs 200,000 (£15,000), minimum rate of levy is  $\frac{1}{4}\%$ , and the maximum rate is  $1\frac{1}{4}\%$ . In case of Hindu undivided families the exemption limit is Rs 300,000, while the minimum and maximum rates are the same as above. The tax is also applicable to joint stock companies (which fact has greatly perturbed the private sector) at a flat rate of  $\frac{1}{4}\%$ , the exemption limit being Rs 500,000. Mr. Kaldor never suggested the imposition of Wealth Tax on corporate bodies.

Of the new taxes introduced, the Wealth Tax provides the best promise of adding to State revenues. The annual yield therefrom is estimated (and not merely guessed) at Rs 12½ crores (somewhat less than £10 million). This would be an infinitely better performance than that of the Expenditure Tax (unless the tax on spendings is made to reach much farther downward to lower incomes—a process which would require foregoing substantial amounts of income tax).

The Capital Gains Tax was introduced in November, 1956 along with the Supplementary Budget for 1956-57. The challenging observations of Mr. T. T. Krishnamachari, the Finance Minister, are worth recounting :<sup>1</sup> “ . . . there is no justification for regarding capital gains as a species of income not liable to taxation. This is a lacuna in the tax system of most countries, a lacuna, one dare say, they will have to rectify in due course.” However, in spite of the fact that Mr. Kaldor smelled in this tax the possibility of enriching the exchequer by an amount within the range of Rs 25-40 crores (between about £19 million and £30 million), the actual revenues are likely to be meagre. India has an experience of Capital Gains Tax for two assessment years, 1947-48 and 1948-49. The realisation of tax due for these two years was continued even after the abolition of the tax. Even then, till the end of the year 1952-53 (*i.e.*, after collection efforts for six years) the total revenue amounted to only Rs 6 crores, *i.e.*, about Rs 3 crores (about £2 million) for each of the two years. Even now, the annual yield, at a liberal estimate, will not exceed Rs 5 crores (less than £4 million). The following extract from the *White Paper* may be helpful :<sup>2</sup> “The increase of Rs 8 crores [£6 million] over the current year’s revised estimates, is due to the capital gains tax imposed last November and the increase then made in the rates of super-tax payable by companies both of which take effect from the 1st April, 1957.”

Two interesting points emerge from this quotation : first, that tax burdens on companies were pushed up while Mr. Kaldor had suggested just the contrary ; secondly, the combined yield from the newly-introduced capital gains tax and the *increase* in

<sup>1</sup>Commerce, Bombay, December 8, 1956.

<sup>2</sup>Government of India, *White Paper* on Budget, 1957-58, placed before the Indian Parliament on March 19, 1957.

company super-tax was estimated at Rs 8 crores for the year 1957-58. It may be that in the long run, yields from this tax show some improvement, for the sponsors of the tax concede that the capital gains tax may require a long gestation period. As such, this tax cannot be relied upon to make any sizable contribution to the resources required for the successful implementation of India's Second Five-Year Plan. It *may* be more helpful to subsequent plans for economic development. Even this is a tentative expectation.

Mr. Kaldor has drawn attention to the logical contradiction between "negligible yield" and "adverse reactions on the economy". He states: "Opponents of the taxation of capital gains in England also frequently argue both that the tax would be ruinous on industry and that it would yield practically nothing, without realising that the two assertions are not compatible with one another." But a little thought will enable us to appreciate that the two things are not necessarily incompatible. The introduction of a tax on capital gains may create an atmosphere of terror in which movements of securities in the capital market may be greatly hindered. And if capital transactions are few, the tax yield is bound to be low. In this connection it is significant that Mr. Kaldor himself has argued that a higher rate of income tax need not necessarily pour more revenues into the coffers of the State; there may be a disincentive effect on honest entrepreneurs, and a positive incentive to the shady deals perpetrated by tax evaders. And it should not be forgotten that Mr. Kaldor treats the two taxes on a par.

Regarding the General Gift Tax, no reliable estimate of its yield is possible till it is actually brought to the statute book. The Finance Minister has declared that the tax would soon be imposed. Interested quarters will therefore watch the budget for 1958-59 with the utmost keenness. Mr. Kaldor claims for this tax an annual yield of Rs 30 crores. But this appears to be a gross over-estimate. Mr. Kaldor assumes an arbitrary figure of Rs 4,000 crores (£3,000 million) as the total value of private property in India in estates of Rs 25,000 or over; he takes the average period of "generation" in India at 25 (the age at which according to Hindu religion a man is supposed to enter married life); he

divides the "total value" by the "average period"; and arrives at the rough figure of Rs 150 crores (annual assessable amount). At an average rate of 20% the yield is estimated at Rs 30 crores. But the calculation seems to have entirely ignored the fact that gifts can be in dribblets and that they can be in favour of people whose net assets are not very large. It also ignores the fact that exemptions will have to be provided for gifts of a religious and charitable nature. If this is not done there will be a volcanic opposition to the measure itself. Finally, Mr. Kaldor has presumed that the gift tax would not only apply to *inter vivos* transfers; it would, at the same time, be in the nature of an inheritance tax. It is doubtful whether in actual practice this position will hold good. Mr. Kaldor, however, is on very firm grounds when he says that "... the rate of progression should vary with the amount *received* by a particular person (the principle underlying the so-called legacy or succession duties), and not with the total amount of property *left* by a man." On this point the present writer is in entire agreement with Mr. Kaldor. As between death duties and inheritance taxes the latter are definitely superior and far more equitable.

Let us now focus our attention on some glaring contradictions and loopholes in the Expenditure Tax Act 1957, as it has finally emerged from the legislative process in India. That the entire superstructure hinges on current incomes has already been pointed out. From the viewpoint of equity a very damaging aspect of this Act is that the *per capita* basis of assessment suggested by Mr. Kaldor has been practically rejected. It was clearly pointed out by Mr. Kaldor that an expenditure tax which ignores the size of the family is much more inequitable than income tax in similar circumstances. But in the case of individuals only a flat basic allowance of Rs 30,000 has been allowed. However large the family of the assessee may be, it will not matter. Where the assessee is a Hindu undivided family there will be a basic allowance of Rs 30,000, in respect of the *karta* (manager—the head of the family working as manager of the joint family business) and his wife and children, and a further allowance of Rs 3,000 for every additional coparcener, provided that the basic allowance for the Hindu undivided family as a whole shall not exceed Rs 60,000 (£4,500) in any year. It may be added by



way of clarification that most of the Hindu assesseees are assessed as individuals and *not* as Hindu undivided families. The latter connotation is applied only to joint Hindu family businesses. A redeeming feature of the Act, specially in the context of Indian conditions, is a permissible deduction of any expenditure incurred by the assessee on the maintenance of his parents subject to a maximum of Rs 4,000 (£300). Again, considering India's social requirements, expenditure on the marriage of an individual assessee or any of his dependents, or on the marriage of the *karta* or any other member of the family, is permissible as a deduction, subject to a maximum of Rs 5,000 (£375). Even this provision would be considered inadequate in many quarters.

In respect of medical expenses there can be a maximum allowance of Rs 5,000 in the case of individuals and smaller Hindu undivided families (consisting of *karta*, his wife and children only); for bigger Hindu undivided families (consisting of additional coparceners) the maximum limit is Rs 10,000. This involves a sudden jump even though there may be only one additional coparcener. The Expenditure Tax Officer is given wide discretionary powers. During the first five years (counted from April 1, 1958) he may allow medical expenses up to Rs 20,000 (£1,500) if he considers this reasonable in the case of certain assesseees who have been used to spending larger sums on medical expenditure. This is a right type of concession, though it is capable of being misused. Another helpful provision is the facility of carrying forward unexpended portions of medical allowance (Rs 5,000 or Rs 10,000) for two successive years. Further, expenses on foreign education are also allowable up to a maximum of Rs 8,000 per year. Expenditure lawfully incurred on civil or criminal suits is allowable fully.

While there are equitable provisions like these, there are some ridiculous features too. The Expenditure Tax Act exempts election expenses, certain types of entertainment allowances, expenditure out of privy purses in certain cases, and purchase and maintenance of livestock (including race horses). Thus many sources of extravagance are actually encouraged by the Act. On the other hand, an amendment seeking to give relief to the assessee on account of financial loss suffered through flood, fire or

earthquake was rejected by the *Lok Sabha*. Again, no relief was provided for funeral and birth expenses. The provision for spreading of capital expenditure on furniture, household goods, motor cars, etc., may also prove inadequate, since it is limited to five years.

On the contrary, expenditure on the acquisition, construction, repair or maintenance of any immovable property is totally exempt. So is the case with bullion, precious stones or jewellery. Thus the very intention of Mr. Kaldor stands scuttled.

Besides exempting charitable and religious gifts (which was reasonable), the Act grants a general exemption for "any expenditure incurred by the assessee by way of, or in respect of, any gift, donation or settlement on trust or otherwise for the benefit of any other person".<sup>1</sup> Further, expenditure incurred by the wife of an assessee is not to be counted unless it was incurred from out of funds which came directly or indirectly from the assessee. These provisions may open the flood-gates of tax evasion. An assessee may make a gift of Rs 35,000 to his daughter and claim exemption thereon. His daughter would not be liable to Expenditure Tax unless her own spendable resources (apart from her husband's) exceeded the sum of Rs 36,000. She need not maintain any account of such expenses, though "in the absence of accounts, the assessee would be at the tender mercy of the Expenditure Tax Officer."<sup>2</sup>

It is no wonder that Pandit Thakurdas Bhargava, an elder statesman of the ruling party itself (Congress Party) described (on the floor of the Parliament) the Expenditure Tax Bill as "cruel" and as a "paradise for dishonest persons and dishonest officers". While certain M.P.'s were pressing for more concessions, the Finance Minister himself was constrained to remark: "Do not make the Bill more ridiculous". He thereby conceded that the Bill had already become sufficiently ridiculous. Further, his announcement that the tax would be administered "gingerly" has made people nervous. They are having genuine fears about their private life being exposed to the mercies of the tax collector. "Vexatious prying into domestic budgets", and "inroads into the

<sup>1</sup>The Expenditure Tax Act, 1957 (India), §5 (j).

<sup>2</sup>*Commerce* (Bombay), October 12, 1957, p. 698.

sanctity of home" are phrases even on the lips of those who are not presently affected by this tax. They have good reason to believe that the tax is bound to travel downward, unless the very idea of taxing spendings is given up after an unsuccessful experiment. The rates of expenditure tax which presently stand within a range of 10%-100% (the maximum rate of 100% applying to net chargeable expenditure in excess of Rs 50,000 per household) are also likely to be sharpened. The highest rate of 300% suggested by Mr. Kaldor may be reached in course of time unless a deluge comes earlier.

OM PRAKASH.

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October 18, 1957.

# A Note on Professor Rostow's "Take-off" into Self-sustained Economic Growth

Professor Rostow has provided us with many suggestive ideas about economic growth, and his latest contribution, which attempts to isolate the "take-off" into self-sustained economic growth, is indeed an attractive notion.<sup>1</sup> It figured recently as part of the argument of Professor P. S. M. Blackett in his Presidential Address to the British Association in Dublin in September, 1957. The purpose of this Note is to examine the validity of Professor's Rostow's thesis in the case of the United States and to assess the usefulness of the concept of "take-off" in the analysis of economic growth.

## I.

Professor Rostow's hypothesis may be briefly summarized as follows: He suggests that "... the process of economic growth can usefully be regarded as centering on a relatively brief time interval of two or three decades when the economy and the society of which it is a part transform themselves in such ways that economic growth is, subsequently, more or less automatic."<sup>2</sup>

This period of take-off is preceded by a lengthy period when the pre-conditions for take-off are established and a subsequent period when growth becomes automatic. Rostow distinguishes two kinds of societies; the first is one in which fundamental social, political and cultural changes are an essential part of establishing the pre-conditions of take-off, and the second is one where more narrowly economic changes initiate the take-off. Whether society is "traditional" (the first case) or "acquisitive" (the second case), take-off is usually initiated by some particularly sharp stimulus. The resultant changes which are defined as take-off are a rise in the rate of productive investment from 5 per cent. of national income or

<sup>1</sup>"The Take-off into Self-sustained Economic Growth," *The Economic Journal*, Vol. LXVI, March, 1956, pp. 25-48.

<sup>2</sup>*Ibid.*, p. 25.



less to 10 per cent. or more, the development of a significant manufacturing sector(s) with a rapid rate of growth, and the accompaniment of these economic changes with social, political and institutional modifications favorable to the perpetuation of this economic expansion. The rise in capital formation comes either from shifts in control over income flows or from capital imports. The leading sectors in the take-off (evidently not the same as the development of a significant manufacturing sector which was part of the definition of take-off) have been diverse ranging from textiles (England) to railroads (the United States, Germany, and Russia). In conclusion Rostow states that " . . . this hypothesis is, then, a return to a rather old-fashioned way of looking at economic development. The take-off is defined as an industrial revolution, tied directly to radical changes in methods of production, having their decisive consequence over a relatively short period of time." <sup>1</sup>

This hypothesis is illustrated with respect to the take-off in a number of countries. I shall confine my remarks to the case of the United States, a country which figures rather prominently in the exposition.

The ambiguities in his illustration make it difficult to come to grips with the case he presents for take-off in the United States. The period of acceleration in growth is given as the years 1843-60 which sub-divide into two periods—the 1840's, confined primarily to railroad and manufacturing development in the east, and the 1850's with rail-road expansion into the middle west (p. 31). However, in a footnote it is suggested that, if New England is considered independently, take-off would be between 1820 and 1850 (p. 45). The sharp stimulus initiating take-off is said to be capital imports (p. 29). However, this stimulus did not come until the end of the 40's (p. 29), six years after take-off was under way in the east. Also a footnote assigns an important role to the tariffs of 1828 and 1841-42 (p. 29). In addition capital imports played a critical role in increasing the rate of productive investment (pp. 31, 32, 40). The railroad was the leading sector (p. 45), although in the case of New England it was the cotton textile industry (p. 45).

Far more serious to Rostow's case is the degree to which

<sup>1</sup>*Ibid.*, p. 47.

his evidence is consistent with what we know of the American economy during the period. First, with respect to capital imports, which figure so prominently both in initiating the take-off and in the increased rate of investment, the evidence available is not consistent with Rostow's interpretation. As pointed out in the preceding paragraph (and acknowledged by Rostow) the expansion in the east in the 1840's was accomplished without any significant capital imports.<sup>1</sup> In fact capital was returning to Europe during most of the decade. Clearly railroad construction in the east could be undertaken without capital imports. What Rostow does not appear to be aware of is that (1) the boom in the mid-west was well under way at the end of the 40's before any significant amount of capital was imported and (2) the total capital imports for the entire period 1847-60 were very modest. The expanded foreign demand for wheat in 1846-47 led to a revival in westward expansion and stimulus to extension of railroads. After a brief setback in 1848, the boom really got going in 1849.<sup>2</sup> Capital imports were not significant until 1850. The following table, giving the net position of the United States with respect to merchandise trade and specie flows from 1847 to 1860, will help to illustrate both the timing and quantity of capital flows.

**TABLE I**  
NET UNITED STATES COMMODITY TRADE AND SPECIE BALANCE,  
1847-1860 (in millions of dollars)

1847	...	...	...	...	+12
1848	...	...	...	...	- 1
1849	...	...	...	...	- 2
1850	...	...	...	...	-26
1851	...	...	...	...	+ 2
1852	...	...	...	...	- 3
1853	...	...	...	...	-37
1854	...	...	...	...	-26
1855	...	...	...	...	+14
1856	...	...	...	...	+12
1857	...	...	...	...	+ 2
1858	...	...	...	...	+42
1859	...	...	...	...	+18
1860	...	...	...	...	+37

Source : U.S. Bureau of the Census, *Historical Statistics of the United States, 1789-1945*, Washington, D.C., 1949, figures are rounded off. Pp. 244-45.

<sup>1</sup>Charles J. Bullock, John H. Williams, and Rufus Tucker, "The Balance of Trade of the United States," *The Review of Economic Statistics*, Preliminary, Vol. I, p. 220.

<sup>2</sup>Walter B. Smith and Arthur H. Cole, *Fluctuation in American Business, 1790-1860* (Cambridge : Harvard University Press, 1935), p. 88.

It remains to see to what extent invisible items modify this picture. Unlike the last quarter of the nineteenth century when large scale capital imports and an export surplus were balanced by very substantial debit items of shipping, immigrant remittances, interest, and tourists, the 1850's were characterized by very large shipping earnings estimated by Bullock, Williams, and Tucker as a net credit of \$243 million for the decade.<sup>1</sup> Other credit items have been estimated as net immigrant (funds less remittances) \$100 million, sale of ships, \$17 million against which are debited interest, \$203 million, and tourist expenses, \$165 million.<sup>2</sup>

While these items are rough estimates <sup>3</sup> they nevertheless made clear that invisible items almost balance out during the decade. I do not mean to imply that capital imports played no part in the expansion of the 1850's. On the contrary I think that they did direct more real investment into railroads than would have otherwise taken place, and helped to finance an import surplus in 1853-54,<sup>4</sup> but this is very different from saying that they set-off industrialization <sup>5</sup> or were instrumental

<sup>1</sup>*Op. cit.*, p. 222.

<sup>2</sup>George Taylor, *The Transportation Revolution* (New York: Rinehart Co., 1951), pp. 204-05 and Appendix B. Taylor's figure on tourist expenditures is 165 million in the text and 241 million in the table. The former figure is clearly the one he intended, based on Bullock, Williams and Tucker estimate, *op. cit.*, p. 223.

<sup>3</sup>In a paper on the United States Balance of Payments, 1789-1860 presented at the Conference on Income and Wealth in September, 1957, I have revised, and, I hope, improved on, existing estimates. My preliminary estimates, while differing on individual items and allowing for undervaluation of imports, do not substantially change the over-all picture indicated by the above figures for the 1850's.

<sup>4</sup>This point is developed in more detail in my article, "International Capital Flows and the Development of the American West," *Journal of Economic History*, December, 1956.

<sup>5</sup>Rostow also maintains that capital imports into Canada were the sharp impetus which initiated take-off (p. 29). Again, however, it appears that capital imports followed the beginning of expansion rather than initiating it. See Kenneth Buckley, *Capital Formation in Canada* (Toronto: University Press, 1955), p. 5. As a matter of fact the first seven years of the take-off period as dated by Rostow (1896-1914) were remarkable in Canadian economic history in that they appear to be one of the few periods when the payment of interest and dividends exceeded the net capital inflow in Canada's balance of payments (Penelope Hartland Thunberg, *Canadian Balance of Payments since 1868*, unpublished manuscript, National Bureau of Economic Research, I, p. 49). Capital imports did not rise appreciably until 1903 and were higher throughout most of the 1880's than in the 1890's.

in raising the rate of investment from 5 per cent. to 10 per cent. of national income. On the latter point, it is clear that foreign capital was far more important in the expansion of the 1830's than it was in the 1850's and was certainly a greater percentage of national income.<sup>1</sup> Clearly gold exports played a far more important role in the years 1848 to 1860 than capital imports and if we turn to the expansion of merchandise trade as a factor enabling the American economy to finance the importation of capital goods it was obviously cotton and not grain as Rostow maintains (p. 40) which was of fundamental importance during this period.

I shall not dwell at length on the effect of the tariffs of 1828 and 1841-42 except to say that Rostow's argument conflicts with the view generally prevailing from Taussig,<sup>2</sup> on that they exerted no such critical stimulus. The fact that America was exporting cheap cotton textiles by 1830 and that Manchester merchants were complaining of American competition in the cotton trade of Mexico and South America as early as 1833<sup>3</sup> makes me doubtful that the 1828 tariff had much influence on the expansion of the cotton textile industry.

The railroad, according to Rostow, played a revolutionary role for three reasons. It lowered transport costs; it was essential to the development of a new and expanding export sector which became important in providing capital for internal expansion; and it induced expansion in other industries (notably coal, iron, and engineering). There certainly can be no quarrel with assigning to the railroad an important role in American expansion in the nineteenth century. However, Rostow's second reason as specifically applied to the United States in the 1850's (p. 45) is misleading if not incorrect. Cotton played the key role in the expansion of American exports up to the Civil War and its expansion was accomplished with little aid from railroads. Wheat and flour, which presumably

<sup>1</sup>Capital imports in the 1830's probably came to about \$200 million dollars and considering the smaller supply of domestic savings and the far more immature state of financial intermediaries, their role was substantially more significant than in the '50's.

<sup>2</sup>F. W. Taussig, *The Tariff History of the United States* (New York: G. P. Putman and Sons, 8th ed., 1931), Ch. III and pp. 57, 128-138.

<sup>3</sup>Arthur Redford, *Manchester Merchants and Foreign Trade, 1794-1858*, pp. 80-81.



Rostow had in mind, accounted for only 13 per cent. of American exports in the years 1846-50, 10 per cent. from 1850-55, and 11 per cent. from 1856-60.<sup>1</sup> Moreover, the five-year interval during which wheat made up the greatest percentage of the value of exports, 1846-50, was before the great extension of railroads into the mid-west.

My last point is to suggest a need for clarification. Rostow says that New England's take-off began in 1820, twenty-three years before the economy as a whole experienced a similar phenomenon. While it is certainly evident in American development that regions experienced varying rates of growth, it would seem from the very chain reaction implicit in Rostow's concept that this should imply take-off for the economy as a whole. I am sure that Rostow does not mean to imply that the whole economy must industrialize since this was clearly untrue of either the south or the west during his period of take-off for the U.S. as a whole. We are still left uncertain about the relationship between regional industrialization and the expansion of the economy as a whole.

We now turn to the usefulness and general applicability of the concept. As I indicated above, the idea of isolating a take-off period is an attractive notion and I should be happy to see such a concept cleared of the difficulties discussed in the preceding section. But such a conceptual framework involves implications about the nature of economic growth which at this stage of our knowledge are highly questionable, of doubtful general applicability, and therefore liable to lead subsequent investigation astray. I shall confine myself to two implications of such a conceptual framework, the transition from pre-take-off to take-off (to use Rostow's suggested terminology, p. 31) in "acquisitive" type economies, and the nature of the acceleration which may take place.

As Rostow points out, the idea of a succession of stages is a return to an old-fashioned framework in which industrialization occurs only after a set of preconditions have been achieved. The barriers in traditional underdeveloped countries are social,

<sup>1</sup>George Taylor, *op. cit.*, Appendix A. Cotton as a proportion of the value of total exports during each of these five year intervals was 46 per cent, 53 per cent., and 54 per cent. respectively.

political, and cultural as well as economic,<sup>1</sup> but in acquisitive cultures "... take-off fails to occur mainly because the comparative advantage of exploiting productive land and other natural resources delays the time when self-reinforcing industrial growth can profitably take place."<sup>2</sup>

In a footnote to this quotation, Rostow admits the possibility of a very different sort of development where agricultural innovations may counter diminishing returns and where increased agricultural productivity will lead on to self-reinforcing industrial growth.<sup>3</sup> However, this argument need not be confined to increases in agricultural productivity. It applies to the exploitation of new land and resources in the "empty" countries of the nineteenth century. The expansion of the New England cotton textile industry, as Rostow points out, came from expanding demand without the region. An important part of this increasing demand came from the south which was experiencing rapid expansion with the development of cotton, and from the west whose population and income were growing with the export out of the area of wheat, corn, and livestock products. Furthermore, it was the rich land and primary production of the west which made the railroad boom of the 1850's feasible. In short, one could advance a hypothesis which is the reverse of Rostow's, namely, that the opening up and development of new areas capable of producing primary goods in demand in existing markets induced the growth of industrialization.<sup>4</sup>

It is doubtful whether the diverse paths by which economies may expand and/or industrialize can be encompassed into any framework of universal applicability, at least in the present state of knowledge. We need to discover a good deal more about the complex phenomena which lead to rapid growth, and, strangely enough, our knowledge is least satisfactory about countries which have experienced most rapid development, as

<sup>1</sup>And it may well be that the set of categories employed by Rostow may be more applicable for this very reason.

<sup>2</sup>Rostow, *op. cit.*, p. 28.

<sup>3</sup>*Ibid.*, footnote 4, pp. 28-29.

<sup>4</sup>The same hypothesis would fit the case of Canada. See Buckley, *op. cit.*, pp. 4-12.

Rostow's illustrative material gives abundant evidence (albeit inadvertently).

There is also reason to doubt the universal applicability of a rapid acceleration in economic growth characterized by an abrupt expansion in the rate of investment. This may have happened in some countries, but it is likely that in others an increased rate of expansion took place rather gradually. The possibility of long swings in the rate of growth and investment may make the evidence adduced for rapid take-off indeed illusory.<sup>1</sup> Certainly international migration, which does not figure at all in Rostow's framework, seems to have behaved in this fashion.<sup>2</sup> So did many other series of obvious importance in economic growth.<sup>3</sup> In the United States, for example, the rate of expansion in a period of rapid growth like the 1830's was not markedly different from that of Rostow's take-off period in the 1850's. It is also doubtful whether investment as a proportion of net national product jumped from 5 per cent. to 10 per cent. (or any other such abrupt change) as between the two periods. I do not deny that the rate of growth and investment may have been increasing as between the two periods, but not in the discontinuous fashion that Rostow's hypothesis implies.<sup>4</sup> There appear to be many possible combinations in the timing and pace of accelerated growth and industrialization, of which Rostow's example of take-off within a space of two or three decades is but one variation.

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<sup>1</sup>There has been an abundant literature in recent years on long swings, trend cycles, or secondary secular movements.

<sup>2</sup>See Brinley Thomas, *Migration and Economic Growth* (Cambridge University Press, 1954).

<sup>3</sup>In the United States long swings have been clearly evident in transportation, construction, and incorporations, to name just three series of significance in economic growth.

<sup>4</sup>The very evidence advanced by Rostow for Canada (p. 35) appears to imply a similar pattern of development. Here net capital formation as a percentage of net national product was 7.1 per cent. in 1870, 4.0 per cent. in 1900, and 10.6 per cent. in 1920.

## Books Received

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- CLEGG, H. A. and ADAMS, Rex : *The Employer's Challenge*. A study of the National Shipbuilding and Engineering Disputes of 1957. Basil Blackwell, Oxford. 21/- net. pp. 179.
- CROSSER, P. K. : *Economic Fictions*. A critique of Subjectivistic Economic Theory. Philosophical Library, New York, \$4.75. pp. 322.
- HIRSCH, Werner Z. : *Introduction to Modern Statistics* with applications to Business and Economics. The MacMillan Co., N.W. 11. 45s. 6d. pp. 429.
- KHAN, Mohd. Shabbir : *Schumpeter's Theory of Capitalist Development*. Muslim University, India. pp. 175.
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# An Index of Wage-Rates by Industries<sup>1</sup>

## I.

The official index of rates of wages published monthly by the Ministry of Labour gives two series of figures, each for men, women, and juveniles ; one for "All Industries and Services," the other "Manufacturing Industries only." Apart from this very broad division, no indices of wage-rates by industries are published in this country.<sup>2</sup> Clearly a more detailed industrial index would be of great value for many purposes. It would make possible, for example, a more fruitful analysis of the structure of wage movements and of the relative movements of wage-rates and wage-earnings in the post-war period.<sup>3</sup> We have tried to calculate such indices using published information.

The indices start in 1948, are calculated on 1948 as base, and are weighted by wage-bills in that year. 1948 was chosen because of the availability of detailed earnings statistics for

<sup>1</sup>Most of our colleagues at Manchester have helped us at some stage with the problems, both theoretical and practical, that arose in calculating this index, but we would like particularly to thank Mr. H. A. F. Turner, Mrs. G. Hansell, Miss A. M. Martin and Mr. J. R. Crossley. We are also much indebted to Mrs. H. Collins, Miss H. Grzesiukowicz and Miss Tyrrell and previous members of the computing staff for their patience and stamina in doing the tabulating and calculating work.

<sup>2</sup>The London and Cambridge Economic Service publish indices of "Quoted Full-Time Wage Rates," but these cover only a limited range of occupations, and since March, 1954, they have not been used to calculate a general index of wage-rates (See *The Times Review of Industry*, March, 1954, London and Cambridge Economic Service, p. viii). In 1935, Mr. E. C. Ramsbottom, then Director of Statistics at the Ministry of Labour, published indices of wage-rates by industries for the inter-war years, but unfortunately these indices were not continued in published form in the post-war period (See E. C. Ramsbottom, "The Course of Wage Rates in the United Kingdom, 1921-1934," *J. R. Statistical Society*, 1935, Pt. IV, p. 639 ; "Wage Rates in the United Kingdom, 1934-1937," *J. R. Statistical Society*, 1938, Pt. I, p. 202 ; and "Wage Rates in the United Kingdom in 1938," *J. R. Statistical Society*, 1939, Pt. II, p. 289).

<sup>3</sup>Also, once the basic material has been extracted and prepared for an industrial index, it could be used for calculating indices by other criteria of grouping (e.g. by degrees of skill, or by region, or by institutional form of wage-fixing).

that year, and also because other important indices, such as the index of industrial production, are based on 1948.<sup>1</sup>

In this article we explain the way in which the indices are compiled, discuss some of the problems of both principle and statistical practice that arise in the calculations, and give the main results for the period 1948 to 1956. We also compare the movement of wage-rates with the movement of wage-earnings over this period. In a later article it is hoped to bring the indices up-to-date on a monthly basis, and to discuss in more detail some of the issues, statistical and economic, which are raised by the results.

## II.

Two publications of the Ministry of Labour are used for the basic information about rates and changes in rates ; firstly the annual *Time Rates of Wages and Hours of Labour* which gives the rates of wages in effect on 1st April of the year to which the publication relates,<sup>2</sup> and secondly the table in each issue of the monthly *Ministry of Labour Gazette* which gives the *Principal Changes in Rates of Wages* reported during the previous month. In order to appreciate the significance of the indices which we compile from this material, it is important to understand the basis of this information published by the Ministry of Labour.

The information which the Ministry of Labour obtains and publishes on wage-rates arises from the operation of the systems of collective bargaining and of wage fixing by Statutory Authorities. The rates published are a summary of the rates agreed in these bargains, awarded by Tribunals, or fixed by Statutory authorities. Since Statutory rates are distinguished separately in *Time Rates of Wages and Hours of Labour*, it is possible to work out the relative importance of these compared with Non-Statutory rates. This information is given in Table 1

<sup>1</sup>The interpretation of the comparative movement of rates between different industries may be affected by the choice of this year as the basis. For one group may have been just at the head of the wage round in that year and another at the tail of a previous round. The importance of this factor will be dealt with in a later article.

<sup>2</sup>The dates to which the rates relate has been 1st April in publications since 1954. In 1947 and 1948 it was September, and from 1949 to 1952, October. There was no publication for 1953.

In the index, as a whole, Statutory rates account for 22 per cent. of the total weights.<sup>1</sup> Statutory rates are much more important for women's rates (46 per cent. of the total weights for women) than for men's (18 per cent. of the weights). The industries in which Statutory rates predominate are Agriculture; Clothing; Food, Drink and Tobacco; Metal Goods n.e.s.; and Miscellaneous Services. Statutory rates are of some, but lesser, importance in Textiles; Leather; Manufacturers of Wood and Cork; Paper and Printing; Other Manufacturing; Transport, Distribution and Public Administration. In other industries (Mining; Treatment of Non-Metalliferous Mining Products; Chemicals; Metal Manufacture; Engineering, Shipbuilding and Electrical Goods; Vehicles; Precision Instruments; Building and Contracting; Gas, Electricity and Water and Professional Services) the rates used are all Non-Statutory, i.e. the results of collective bargaining.

Since the material in the Ministry of Labour's publications relates to Statutory rates or rates agreed by collective bargaining, rates in industries or occupations not covered by either of these systems are not given and are therefore not covered by our index. Statutory rates and collective bargaining between them now cover, directly or indirectly, most wage-earners. The only Order<sup>2</sup> not covered by any rates at all in the index is Insurance, Banking and Finance (Order XXI). Two other Orders, Professional Services (XXIII) and Miscellaneous Services (XXIV) are only partially covered. In Miscellaneous Services, for example, there are no rates for resident domestic service which in terms of wages-bill accounts for about one-quarter of the Order. There are other industries and occupations for which no rates are available, but except for the three cases mentioned above they do not account for a substantial part of an Order. A list of Minimum List Headings of the Standard Industrial Classification not covered by any rate at all and their importance in each Order is given in Table 2.

In many agreements and wage orders separate rates are fixed for juveniles. But the rates for juveniles are not given

<sup>1</sup>See pages 91-96 for an explanation of the weighting system used.

<sup>2</sup>The analysis and grouping of rates is done throughout on the basis of the Orders and Minimum List Headings used in the Standard Industrial Classification.

regularly either in *Times Rates of Wages and Hours of Labour* or in *The Ministry of Labour Gazette*. We felt at an early stage of the work that the information on juveniles available to us from these two sources would not be sufficient to enable us to calculate separate indices for juveniles by industry, and we decided to exclude juveniles altogether from our indices. The indices, therefore, relate to adult rates only.<sup>1</sup>

The rates available for each industry or group of industries reflect the form of wage fixing by the Statutory authorities or the collective bargain made between employers and Trade Unions. In some industries one or two national rates only are specified; in others there is great detail providing for a wide range of grades of labour, for variations in different areas of the country, and for special circumstances in which the work is done. Sometimes this difference in the range of rates available reflects a real difference in the degree of differentiation of rates paid in the industries concerned, but in others it merely reflects an institutional difference about what is provided for in the national agreement and what is left for negotiation at the district, firm or workshop level. Unless these local variations reflect local agreements by independent District Trade Unions they are not usually included in the Ministry of Labour publications. In general, the most important point is that the rates provided for in separate workshop or firm agreements are rarely included.

The number of series varies substantially from industry to industry, and there is no relation between the importance of an industry and the number of series included. The total of separate rates taken into account in the indices is about 4,000. There is only one series for Agriculture in England and Wales outside Holland with Boston in Lincolnshire, but 136 series for Bricks and 188 for Printing.<sup>2</sup> A summary of the number of series used in the index is given in Table 3.

<sup>1</sup>The age at which juveniles graduate to adult rates varies substantially over time and between occupations and industries. It will be seen, however, from Table 7, that the exclusion of juveniles makes little difference to the overall index.

<sup>2</sup>A detailed description of the rates included for each industry has been compiled, but it would take far too much space to publish with this article. The list can, however, be seen by anyone interested.



Rates fixed by Statutory authorities apply of course to all those engaged in the relevant industries and occupations, but rates agreed by collective bargains in the first place relate only to members of the employers associations with whom the agreement is made.<sup>1</sup> The Unions may be in a position to induce other employers to follow the agreed rates, or they may even make specially favourable agreements with some of them ; but there are some firms where rates are fixed without intervention or negotiation with the Unions. Without detailed and extensive research it is impossible to say, therefore, in the case of any particular set of rates to what body of workers they apply in practice. Our indices are implicitly calculated on the basis that the collectively agreed rates apply to all wage-earners in the relevant industry.

There is, of course, the further point that both the Statutory rates and those collectively agreed, are minimum rates, and rates in excess of these may be paid even by firms who are members of the Employers' Association. It is quite common for those who are familiar with industrial conditions to quote cases they know where rates are paid in excess of what are called Trade Union or Statutory rates. But there is no regular information of the extent of the practice or of its variation from time to time. Since no account is taken of rates actually paid as distinct from rates laid down by agreement or order, our index must be interpreted, therefore, as an index of *minimum* rates collectively agreed or fixed by Statutory authorities.

For some industries there are both rates fixed by Statutory authorities and rates fixed by collective bargaining. Where both sets of rates were complete and easily manageable we have included both. Where the collective bargain included complicated local agreements<sup>2</sup> we have used the Statutory rates only. And where Statutory wage-fixing seems to have

<sup>1</sup>A rate awarded on the reference of a dispute to the Industrial Disputes (formerly National Arbitration) Tribunal may, however, be held to apply to the whole class of workers, whether or not Trade Union members or employed in Non-Federated firms. Similarly, a rate determined by normal collective agreement may, on application, be ordered by the Tribunal to apply to a firm not formally party to the agreement.

<sup>2</sup>As in Baking.

died out <sup>1</sup> during our period, we have used only the negotiated rates throughout.

The inclusion of rates for piece rate workers, or workers on any other kind of incentive bonus scheme, raises particularly acute difficulties.

These schemes usually vary from firm to firm, and their complex structure in each case, together with technical, economic and managerial progress will have a great influence on changes in the pay which workers actually receive.<sup>2</sup> Statutory wage orders and Trade Union national agreements rarely take account of these complex factors, and usually merely specify the minimum wage which a piece-worker of average ability should earn. In wages fixed by Statutory orders the actual wage to be earned in a given period of time is usually specified. Quite often in negotiated rates, it is prescribed that piece-workers should earn a certain percentage above their own, or time-workers' basic rates. In some cases when time-rates are changed by a specific sum, the same amount is added to the prescribed minimum earnings for piece-rate workers. In those cases where the prescribed piece-workers' rate is simply a percentage addition to the time-rate, our estimate for changes in piece-rates and time-rates will be the same, if this percentage remains unchanged. Where piece-rate workers are covered in these ways, in effect we are measuring changes in the prescribed time-rates for piece-rate workers, rather than changes in actual piece-work prices. Specification of changes in piece-work prices themselves, as distinct from prescribed earnings of piece-workers, is very rare either in Statutory wage orders or collective agreements. But occasionally agreements which specify increases in time-rates, also state the percentage by which piece-work prices shall be increased.<sup>3</sup>

In some industries even though piece-work is of substantial importance, rates for piece-workers are not mentioned in the collective agreement ; in such cases increases in piece-rates are negotiated at district or firm level. Coal mining is an example.

<sup>1</sup>As in Tobacco Manufacture.

<sup>2</sup>This is specially important in the engineering group of industries.

<sup>3</sup>This happens, for example, in the cases of Dock Labour throughout the period covered by our index, and for the last two changes for workers in Heavy Chemicals.

In the period covered by our index piece-rate workers are mentioned only once<sup>1</sup> in national agreements. For all other changes, only time-rate workers are mentioned. Yet one knows from other information, particularly about average earnings in coal mining, that the changing rates for work agreed at the local pit level in effect imply substantial increases in piece-workers' rates over the period. The way in which we have dealt with this case is explained in detail later.<sup>2</sup> Here we are concerned to explain how tenuous is the available material on piece-rate changes. This is probably the most serious gap in the index. Indeed the index should probably be interpreted as an index of time-rate wages, rates for piece-workers being taken in the main as the prescribed time-rate for piece-rate workers.<sup>3</sup>

Another complication arises from payments in kind. We may measure changes either in minimum cash payments or in the full value of the minimum remuneration, including any paid in kind. The choice presents itself chiefly in Agriculture, Coal Mining, and the Catering Trades. In these industries allowances in kind are of substantial importance and we have decided to include them. But there may be allowances in other industries which are not specified in agreements and those would not be covered.<sup>4</sup>

Our index measures changes in *weekly* wage rates. In practice the time unit in which rates are specified varies. There are one or two annual and monthly rates, and a large number of shift and hourly rates. All these, therefore, have to be translated into equivalent weekly terms. This inevitably introduces yet another arbitrary element into our figures of changes in rates. It also means that where the rate per shift or per hour is increased merely to offset a reduction in the

<sup>1</sup>In November, 1951.

<sup>2</sup>See pages 89-91.

<sup>3</sup>However, even if comprehensive material was available of changes in actual detailed complex piece-work prices and incentive bonus payments, there would still be the extremely difficult, and possibly unmanageable, problem of translating these into percentage change in *wage-rates*, as distinct from changes in the *actual earnings* of piece-rate workers.

<sup>4</sup>e.g. the extension of canteen meals, often subsidised by the firm, and of luncheon vouchers, are examples of important additions to money wage-rates over this period which are not covered by our index.

number of shifts or hours per standard working week, this does not show as an increase in rates in our index. Similarly a reduction in the number of standard hours per week for workers on a weekly rate, is not counted as an increase in rates.<sup>1</sup> In fact, however, the length of the normal working week has changed little since 1948, which is when our index starts. The Ministry of Labour's index of normal weekly hours fell from 104.3 in December, 1945 (June, 1947 = 100) to 98.6 at the end of 1947 and was 98.0 at the beginning of 1956.<sup>2</sup>

The calculation of indices of changes in wage rates by industries necessarily involves an industrial classification and grouping of rates and changes in rates. In principle we have adopted the system used in the official Standard Industrial Classification. But the institutional structure of Trade Unions and Statutory wage-fixing authorities is not industrial, but a complex occupational and industrial mixture. One cannot fit this structure into the Standard Industrial Classification without doing considerable violence to the real facts of the wage system. The element of arbitrariness in the classification increases the more detailed the industrial groups used. Although we have calculated indices for all the Minimum List Headings in the Standard Industrial Classification, we publish here in the main only figures for the much wider Orders.<sup>3</sup> In relation to these Orders there is less room for criticism of the classification we have adopted.<sup>4</sup>

<sup>1</sup>In practice, of course, such a reduction in hours may mean a more than proportionate increase in the earning power of the workers. For if, as often happens, the number of hours actually worked remains unchanged, a bigger proportion will be paid at higher overtime rates. The Trade Unions may, therefore, bargain for higher effective rates either by asking for a higher weekly rate or by asking for the standard number of hours per week to be reduced.

<sup>2</sup>*Ministry of Labour Gazette*, September, 1957, p. 330. A change in normal weekly hours since 1948 may, however, be important in particular industries.

<sup>3</sup>Figures are given for one or two industries in the larger Orders.

<sup>4</sup>An alternative classification would be according to Trade Union affiliations and grouping of wage-fixing authorities. But this would be of little use for economic analysis, since other statistics with which one wants to compare changes in wage rates, such as earnings, employment, production, are based on an industrial classification, and since 1948 on the Standard Industrial Classification.



## III.

So far we have discussed the basic material we have used. We now turn to the problems that arise in working out from this material percentage changes in rates compared with 1948. As explained earlier, about 4,000 separate series are used in compiling the indices, and it would be quite impossible and inappropriate in an article of this kind to try to explain how each of these is derived from the original material. All that we attempt here is to indicate some of the main recurrent problems and to show how we have dealt with these, giving a few actual examples of our methods by way of illustration.

Since all comparisons are made with the average for 1948, the first task is to establish for each series the average rate to be used for 1948. Where there was no change in rates in 1948, there is usually no problem in establishing this base rate. Where some change occurred during the year, the average for the year 1948 is arrived at by adding up the rates in force for the whole or major part of each month of 1948, and dividing the sum by twelve. Where there is no ambiguity about the date of the change, this is usually no more than a matter of simple arithmetic. But in some cases, although the information available implies that a change took place some time during 1948, there is no indication in the published material of the actual date of change. Since the date of change affects the average for 1948, by which we have divided all subsequent rates to arrive at the series of yearly and monthly relatives it is important to get this right, and in all doubtful cases we have obtained information about the actual date of change from the negotiating body concerned.<sup>1</sup>

Sometimes both official and unofficial dates are given for the coming into effect of a change. For example an increase in the rates for workers in Jute manufacture was prescribed by a Wages Council order having legal effect on 14th April, 1948. A footnote, however, states that "pending the issue of the

<sup>1</sup>This problem of the timing of the change, also often arises in the later periods of the index. But since in these cases the effect on the index is only for the period within which the change might have fallen we have not gone to great trouble to discover the exact timing of the change, except where the weight or the amount of change was substantial.

Order giving them Statutory effect, these new rates have been, by agreement, in operation since 7th January.”<sup>1</sup> In this and other similar cases we take the new rates to be in operation from January, even though they were not legally enforceable minima until April.

If a complete series were available for later periods for each occupation and industry of all the rates in existence in 1948, the calculation of percentage changes for each of these would in principle be comparatively easy. A recurrent difficulty is that in the course of the period new rates appear and, less frequently, rates hitherto quoted cease to appear.

Take Asbestos Cement Manufacture as an example of a new set of rates, appearing for the first time in 1951. Before 30th September, 1951, one occupation only—unskilled workers on day work—is quoted, with different rates for each of three groups of towns (2s. 6d. per hour in Group 1 towns, 2s. 5d. in Group 2, and 2s. 4d. in Group 3). On 30th September, 1951 an increase of 3d. an hour was reported. In “Time Rates of Wages and Hours of Labour, 1st October, 1951” four grades of occupations (Grades 0 to 3) appear for each group of towns. The lowest Grade 0 has rates of 2s. 9d. an hour (Group 1 towns), 2s. 8d. (Group 2 towns) and 2s. 7d. (Group 3 towns). It seems, therefore, that this occupational Grade 0 corresponds to the old “unskilled labourers on day work,” and on this assumption the new rates for that grade give increases compared with 1948 of 25·1 per cent. in Group 1 towns, 26·1 per cent. in Group 2 towns and 27·2 per cent. in Group 3 towns. For the three higher occupational grades (Grades 1, 2 and 3) the rates were 1d., 2d. and 3d. an hour respectively higher than those for Grade 0 in each group of towns.<sup>2</sup> To include these new rates we have in some way to relate them to the base year 1948. This means deciding whether they represented rates previously in existence and separate from those for “unskilled labourers,” but now being published by the Ministry of Labour for the first time, or whether they really indicated the introduction of a new set of grades and the promotion of some workers to whom

<sup>1</sup>*Ministry of Labour Gazette*, June, 1948, p. 213.

<sup>2</sup>e.g. for Group 1 towns, the rates were 2s. 10d., 2s. 11d., and 3s. per hour respectively for Grades 1, 2 and 3.

the unskilled rate previously applied. We make the former assumption, partly because in earlier issues of "Time Rates of Wages and Hours of Labour" footnotes to the rates for this industry indicated that "there is a grading system under which differentials . . . are paid . . . to workers in certain occupations." We, therefore, assimilate the new occupational grade to Grade 0, that is, we assume that the percentage change in rates between 1948 and September, 1951, was the same as that we had worked out for Grade 0 or "unskilled labourers."

An example where we interpreted the evidence in the alternative way, i.e. as promotion of some workers to a new set of more highly paid grades, occurred with women's rates in Railway Workshops. Up to 1st October, 1949, rates were quoted just for "women on women's work," at 71s. per week in London and 69s. in "other districts." "Time Rates of Wages and Hours of Labour, 1st October, 1950" quotes rates for six groups of occupations, with separate rates for London and "other districts." All these rates are given as before under the general heading: "Women, 21 years and over, on women's work." The lowest of the six groups had rates, 71s. (London) and 69s. (other districts)—identical with the single rates quoted previously. The other groups had rates rising to 80s. (London) and 78s. (other districts) for the highest. We assume that all workers paid at these new rates had been paid at the old general rate, and, therefore, that this new system represented a real increase in rates for such workers.<sup>1</sup>

Similar problems, so to speak in reverse, occur when rates cease to be quoted. There are fewer cases of these than of new rates, but they raise the same kind of issue of how to splice the old and new information.

Another frequent source of dilemma is the luxuriant growth of additions to the basic weekly rate to meet special circumstances. Some of these additions compensate for unfavourable working conditions, such as night-shifts and overtime, or wet, dirty or dangerous work,<sup>2</sup> or for jobs involving exceptional travelling;<sup>3</sup> some recognise special industrial

<sup>1</sup>The increase varying from 2s. in Group 5 to 9s. in Group 1.

<sup>2</sup>e.g., this is provided for in builders' rates.

<sup>3</sup>e.g., constructional engineers in London working on jobs involving exceptional travelling get a special addition.

worth, such as good-time-keeping ;<sup>1</sup> and others give special additions for working on expensive materials<sup>2</sup> or for looking after an added number of machines,<sup>3</sup> or taking on extra responsibility.<sup>4</sup> These special additions are difficult to deal with, because they do not usually change proportionately with the basic rates and because some of them are abolished during the period in which we are interested. And it is rare for much information to be given about the number of workers who enjoy the benefit of such additions. But they are frequently an important element in wage-rates and we felt it would be a mistake to ignore them altogether. We have, therefore, tried to include them where there was circumstantial evidence that they have sustained and widespread application. But this frequently involves us in making quite heroic assumptions. Changes in rates due to cost of living sliding-scale arrangements are in general covered.

The only important set of additions which we have ignored completely are those for shift-work, night-work<sup>5</sup> and overtime. This is partly because there is a case in principle for confining the index to the measurement of changes in rates for the "normal working week." The inclusion of overtime rates would make an appreciable difference to the indices, especially if allowance were made for the varying number of hours worked at such overtime-rates. But it is doubtful whether the inclusion of shift allowances would make much difference.

In some industries the rate paid varies with the length of time the worker has been in the occupation. Where there is a special rate for a short probationary period, say for three months, we have ignored it ; but where the initial period is long, and is either sharply extended or curtailed after 1948, we

<sup>1</sup>e.g., woolworkers in Leicester receive a good time-keeping bonus.

<sup>2</sup>e.g., worsted spinners in Yorkshire receive extra if they work in coloured wool.

<sup>3</sup>e.g., wool spinners in Scotland are paid extra for every mule tended in excess of two.

<sup>4</sup>e.g., warehouse workers in pottery get an extra sum if they "have control of books and orders."

<sup>5</sup>In a few occupations separate minimum rates are quoted for shift and night workers. But usually night and shift allowances are given in footnotes, and it is not clear, unless one knows the industry well, to what occupations or sections they apply.



have tried to take account of this. The rates for locomotive firemen in Railway Service is a good example. From 1st September, 1947 to February, 1948, the rates were 101s. a week during the first and second years, 104s. in the third and fourth, 110s. for the fifth to the tenth, and 115s. from the eleventh year onwards. By 1st April, 1956, rates had increased to 155s. in the first year, 165s. in the second and 175s. 6d. from the third year onwards. Thus between September, 1947 and April, 1956, rates for firemen had increased by 53 per cent. and 63 per cent. for the first and second year of service, by 69 per cent. for the third and fourth years, by 60 per cent. for the fifth to tenth years and by 53 per cent. for the eleventh year onwards. The importance of the first four or first ten years of service depends on how long the fireman usually spends in the occupation. Assuming he spends twenty-five years on average in this occupation, the increase in the rate for the eleventh year onwards is relevant for rather more than half his service; that for the fifth to the tenth for about a quarter, and none of the others for more than a tenth each. We decided, therefore, to ignore the first four years, and to use an average rate derived by combining the rates for the fifth to tenth years and the eleventh year onwards in the ratio of 1 to 2. This gives us a rate of 113s. 4d. for January, 1948<sup>1</sup> compared with the rate of 175s. 6d.<sup>2</sup> on 1st April, 1956, an increase of 55 per cent. over this period.

There is frequent difficulty in dealing with pieceworkers' rates. Where the rates specified are "piece-work basis time-rates" per hour or per week, or the percentage by which the earnings of piece-workers of "average ability" shall exceed the time rate, the calculation is done in the same way as the time-workers. In such cases the series are merely prescribed time rates for piece-workers, rather than measures of changes in actual piece-work rates. Where actual additions to piece-work prices are quoted, the calculation of a series is always difficult and some very odd results can emerge. Take coal-mining as an example. This situation in coal-mining is probably unique, but

<sup>1</sup>110s. (the fifth to tenth years) plus  $2 \times 115s.$  (the eleventh and later years) divided by three.

<sup>2</sup>The rate for all years after the second.

can be taken as a warning of the extreme difficulty of dealing with piece-work on a realistic basis in a wage-rate index. In the national agreements between the N.U.M. and the Coal Board since 1948, an increase for piece-workers has been specified only once.<sup>1</sup> Apart from this, piece-workers were not mentioned in national agreements. If one sticks literally to the measurement of nationally agreed rates, therefore, there would be only a negligible percentage increase over the period for piece-workers in coal-mining, and consequently a much lower increase in coal-mining than the national average increase in rates. But this would be nonsensical, for it is generally known that prices for stints agreed at the pit level have been going up gradually over the whole period. The National Coal Board has tried to assess the importance of these upward revisions by getting quarterly reports from their Divisions of the estimated effect of piece-rate revisions at each colliery on the annual wages-bill. The Board has given us access to these reports and we have used them to calculate an estimate of changes in piece-workers' rates for our period. The index figure so derived was very low compared with 144.0 in the rate index for time-workers, and with the increase in average earnings of all adult coal-miners of 64 per cent. between 1948 and 1955. We did not feel, therefore, that the index for piece-work coal-miners derived from the National Coal Board data was a sufficiently meaningful measure of changes in rates for those workers to warrant its use in the index. Consequently we were left with no satisfactory measure of changes in piece-work rates in coal-mining, and had to fall back on the expedient of using the rate for time-workers only as a measure for the industry as a whole.<sup>2</sup> This example makes

<sup>1</sup>In the wage agreement of December, 1951, which operated from 22nd November, 1951, a flat rate addition was granted to piece-workers of 2s. 3d. per shift for those underground and 1s. 11d. per shift for those on the surface; thus making, with the existing flat rate addition of 2s. 8d., the total flat rate additions 4s. 11d. for underground piece-workers and 4s. 7d. for surface workers.

<sup>2</sup>An alternative, in this and similar cases of difficulty, would have been to use estimates of figures of average actual earnings of piece-workers if they were available. But this would have meant departing from the basic concepts behind an index of *wage-rates*, and would in any case be inappropriate for one of the major uses we have in mind—the comparison of movements of rates with movements of actual earnings.

it worth emphasizing once again how unsatisfactory the treatment of piece-rates is, both in the basic material and in our indices.

#### IV.

After figures of percentage changes in rates for individual occupations have been calculated from the basic material, they have to be combined to give indices for industries, Orders and the economy as a whole. In principle we have followed the usual method of weighting by the wages-bill. It was the availability of information for weighting which led us to make 1948 the starting point and base year for our index. For substantial information about wages-bills is given in the first full post-war Census of Production for 1948, and the Ministry of Labour used the Standard Industrial Classification in their half-yearly Earnings Enquiries from October, 1948 onwards. The index published here is base weighted, but we intend later to calculate a current year weighted index from the same material, in order to assess the effect on average rates of movements between industries.

Weighting raised another set of problems. But before turning to deal with these it is worth mentioning that errors in weighting are usually less serious in their consequences in an index number of wage-rates than in other index numbers such as those for prices or production. This is because weighting is more important if the movement in individual series included in the index differs substantially. If they all show a similar percentage change, any average, different sets of weights will give much the same index. In general, wage rates in different occupations tend to move much more together than the production or prices of individual commodities; and the problem of weighting is, therefore, less serious, especially for group indices which cover a large number of series. But since we are interested in constructing an index not merely to give an average for the whole economy but also to reveal any differences that there are between major industries, we have tried to be as accurate as possible in the weighting used.

We deal first with the problems of combining the individual series to give indices for each industry, and then with those of

combining the industries into Orders and into an index for the economy as a whole.

Within an industry weighting is needed chiefly between piece-workers and time-workers, between different areas and sections of the industry, and between different occupations. Accurate figures of wages-bills are not available for any of these categories and some substitute form of weighting has to be used.

Information by industry of the number of workers paid on some form of "payment by results" scheme is given for October, 1949.<sup>1</sup> Weighting on the basis of number of workers would underweight piece-workers since generally the average earnings of piece-workers are higher than time-workers. We adjust the figures based on numbers to allow for this.<sup>2</sup>

For weighting areas and regions, the Census of Production, 1948, is very useful; for each Report analyses the wages-bill of the Trade by Standard Regions. But these regions do not usually correspond to the regional differentiation of wage-rates. The distinction between "London" rates and those for "other districts" is a common one, but in the Census Classification London is included in the "London and South Eastern Region." We use the wages-bill for that region to correspond to London, with the consequence that we persistently, if slightly, overweight movements in London rates in the indices.

In some industries all localities are assigned to grades, each with different rates. The weighting of such grades is a complicated task, especially if localities are continually being moved from one grade to another. Rates in building are a good example. In 1948 all towns outside Greater London and Merseyside were divided into four grades, A, A1, A2 and A3. Nearly every region had towns in each grade, so that regional wages-bills do not help in weighting the grades. In addition every year some towns were moved from lower to higher grades while the rates for each grade also rose steadily. In these circumstances the average of the movements of the rates for each grade would not adequately represent the course of wage-rates over the period. In October, 1949, for instance several

<sup>1</sup>*Ministry of Labour Gazette*, March, 1950, p. 86.

<sup>2</sup>The adjustment was made on the basis of the excess over the minimum time rates which piece-workers were normally entitled to earn under the wage agreement for the industry concerned.



towns were moved upward from Grade A3 to Grade A2. At that date the rates for craftsmen were 2s. 8½d. an hour in Grade A3 and 2s. 9d. an hour in Grade A2. For craftsmen in the regraded town this was effectively an increase in the rate of ½d. an hour. To deal with this we construct separate series for towns moved from one grade to another as well as for those which remained throughout in the same grade, and weight each series by the population of the towns to which they apply<sup>1</sup> in order to obtain a general rate for craftsmen.

Weighting of occupations is difficult unless as sometimes happens the industry itself publishes statistics of employment by occupations.<sup>2</sup> The Census of Population occupational analysis is relevant only for a few industries. For some of the important industries special information was obtained, including rough estimates made for us by those with specialised knowledge of the industry.<sup>3</sup> But in many cases, no information even of the roughest kind is available, and in these cases we merely take an unweighted arithmetic average of the series for the various occupations.

In general we are able to weight individual industries by wages-bills, to give series for Orders, although, as will be seen, for some industries these are only rough estimates. Estimating wages-bills for industries covered by the Census of Production for 1948 is relatively straightforward. We allow for small firms and unsatisfactory returns by using the information about employment<sup>4</sup>, and for Northern Ireland on the basis of the Census of Production for 1949.

When two or three of our wage-rate industries are covered by a single Census of Production Trade, they are weighted by the wages-bills of the appropriate specialist producers or by the output of appropriate principal products given in the Census reports. Sometimes although only one industry corresponds

<sup>1</sup>On the assumption that the number of building workers varies with population size.

<sup>2</sup>As British Railways, in the Annual Reports of the British Transport Commission.

<sup>3</sup>We have had access to statistics giving an occupational analysis of employees in Coal-mining and Cotton Spinning, and rough estimates in Building, Chemicals and Shipbuilding.

<sup>4</sup>We assume that the ratio of wages-bills of "small" to "large" firms is the same as that for employment.

to a Census Trade, it seems unreasonable to give that industry the whole weight of the Trade. For example, the Census Trade "Non-Ferrous Metals Smelting and Rolling" covers aluminium, magnesium, lead, zinc, tin and all other non-precious metals other than iron and steel; but our wage-rate index for the industry covers "Brass and Copper Rolling and Casting" only. We have no reason to believe that wage-rates for employees working with the other non-ferrous metals move closely with those on brass and copper, and, therefore, we have given our rate for the industry a weight corresponding to the wages-bill of specialist producers of copper and brass. This is an example of a recurrent problem. Where only a section of an occupation, industry, or Order is covered by the wage-rate information, should one give the series the full weight of the occupation, industry or Order, or a weight corresponding only to that part actually covered? The first alternative implies the assumption that the rates not covered in the occupation, industry or order move in close correspondence with the average of the rates covered in that occupation, industry or Order; the second that the parts not covered are best represented by the average movement in a wider section of industry. In the particular example outlined above we are virtually assuming that rates in non-ferrous metals manufacture other than copper and brass are better covered by the average index for the Order "Metal Manufacture" than by the index for "Copper and Brass," which forms part of the Order.

With the help of information supplied by the Central Statistical Office we have been able to arrive at fairly reliable estimates for relative size of wages-bills for the various industries in Agriculture,<sup>1</sup> Public Administration<sup>2</sup> and Transport.<sup>3</sup> For Distribution we use the information about wages-and-salary bills for various kinds of business, wholesale and retail, published in the Reports of the Census of Distribution and Other Services 1950. The weighting of the industries we cover under

<sup>1</sup>Agriculture and Forestry.

<sup>2</sup>National Government Service and Local Government Service.

<sup>3</sup>Post Office, Railway Service, Road Transport, Road Haulage, Merchant Navy, Dock Labour, Inland Waterways and Cold Storage.

Miscellaneous Services<sup>1</sup> is done more crudely, mainly on the basis of information about employment.<sup>2</sup>

In combining the indices for Orders to give an index for the economy as a whole, we use the figures of wages-bills for 1948 given in the Blue Book, National Income and Expenditure<sup>3</sup>.

For every Order except "Miscellaneous Services" the wages-bill for the whole Order is used as a weight in arriving at the total index, even though in many cases some industries within the Order are not adequately covered. As was explained earlier, this amounts to an assumption that the rates in the industries concerned are more likely to have moved as the average of the rest of the Order than as the average for the economy as a whole. Such an assumption does not seem to be warranted in the case of the "Miscellaneous Services" Order ; firstly because the industries for which we have rates cover only about half the wages-bill of the Order, and secondly because there seems to be no significant economic relation between them and those not covered.<sup>4</sup> In this case we have given the Order a weight in the total index represented only by the wages-bill for those industries for which wage-rates are included.

Throughout the index, for the industries, Orders and the total index, we calculate separate series for men and women. To combine these to give the indices for all workers, we need weights, and here again in principle we use the wages-bill of men and women employees. In practice such figures are not always available and sometimes we have to use estimates of numbers of men and women employed, corrected roughly for the difference between the average earnings of men and women.

<sup>1</sup>Catering, Hairdressing, Laundering, Funeral Direction, Cinemas, Theatres and Musicians in theatres and music halls.

<sup>2</sup>Since men earn more than women, we take account of differences in the proportion of male and female employees.

<sup>3</sup>For "Distribution" and "Other Services" figures are given in the Blue Book only for "income from employment" (wages and salaries combined), but with help from the Central Statistical Office estimates were made of the wages-bill.

<sup>4</sup>The industries covered are Cinemas, Theatres and Music Halls, Catering, Laundries, Hairdressing and Funeral Direction ; those not covered, Sport, other Recreation and Betting, Private Domestic Service, Photography, Welfare and Charitable Services, Community Services, Services in Colonial, Dominion and Foreign Governments, Chimney-Sweeping and Window-Cleaning.

Information about rates for women is not always available. In such cases, in calculating the Order index, we use the index for men only as the index for "all workers" for the industry, thus assuming that women's rates in those industries which are not covered in our figures are best taken in each case to move together with those for men. But in arriving at the index for women for any particular Order we merely take account of the available women's indices for industries included within the Order, thus assuming that women's rates in the Order not covered are best represented by the average of those which are covered.

#### V.

The main results are given in Tables 4 (All Workers), 5 (Men), and 6 (Women). These give annual figures for 1948 to 1955 and certain monthly figures from the beginning of 1955 until April, 1956, for all the Orders of the Standard Industrial Classification, together with figures for a few of the more important industries within the largest Orders. The weights used are shown in each table.

The movement in our indices, for the total, men and women, both for all industries and manufacturing industries separately, correspond very closely with the Ministry of Labour indices for the period (See Table 7).

The average increase over the period is 54 per cent. for men and 53 per cent. for women. However, in every Order, except Treatment of Non-Metalliferous Mining Products and Professional Services, women's rates have increased by as much as or by more than men's.<sup>1</sup> The equality of the overall increase for the two indices reflects the much heavier weight in the women's than in the men's index of the industries where rates have risen least. The indices for women range from 138 for Cotton to 177 for Vehicles. In general rates have risen well above the average in the Vehicles, Engineering and Metal Goods industries, but these three Orders together account for only 8.3 per cent. of the weights in the index for women. The important Orders for women are Textiles, Clothing, Distribution

<sup>1</sup>These comparisons and those made later in this section may be affected by the year, 1948, taken as the base. In a later article a more detailed comparison which will allow for this possibility, will be made.



and Miscellaneous Services (accounting together for 63·4 per cent. of the weights),<sup>1</sup> and in these rates rose by only 47 per cent., 52 per cent., 55 per cent. and 43 per cent. respectively.

The spread of increases for men—from 139 in Cotton to 164 in Gas, Water and Electricity—was narrower than for women. Here again the high increases in Metal Manufacture and Engineering are outstanding. One or two industries, such as Textiles, which tend to lag behind later are well up to the average rate of increase in 1954.

One of the most interesting and remarkable features of post-war movements in wages is the wide divergence between the rates of increase of wage-rates and average wage-earnings. Complete figures of average earnings are not available for all industries, but such figures as there are are given in Table 8 (All Workers), 9 (Men), and 10 (Women) in the form of index numbers (with 1948 = 100) to facilitate comparisons with changes in rates. These index numbers are based on the actual earnings and employment in industries at each date, so they reflect the changing composition of the labour force within each industry or group of industries. The figures are mainly based on the half-yearly Earnings Enquiries taken by the Ministry of Labour, but, although they are on a slightly different basis, figures from other sources have been used for Agriculture and Coal Mining. Important sections of the economy are not covered by these figures,<sup>2</sup> and we felt, therefore, that it would be misleading to work out an overall average earnings index<sup>3</sup> to compare with our overall index of wage-rates.

In making comparisons between rates and earnings for particular industries, it is important to keep in mind the simple point, frequently overlooked, that the indices of wage rates and of earnings merely *compare rates of change* in different industries, and tell us nothing about the absolute level of rates or earnings in one industry compared with another. Similarly a comparison of indices of wage-rates and average earnings

<sup>1</sup>See Table 3 for the relative importance, by wages-bills, of women's rates in each Order.

<sup>2</sup>Distribution, Catering, Entertainment, Commerce, Domestic Service and a large part of Transport are not included.

<sup>3</sup>We hope in the later article to make an estimate of movements of overall average earnings covering all wage-earners.

for an industry gives no indication of the absolute margin between minimum rates and actual earnings in that industry. It merely measures the difference in the relative movement of minimum rates and of earnings.

The interesting aspect of the divergence between movements of rates and earnings which our calculations make it possible to analyse for the first time, is the variation between industries. The variation is substantial. For men it is narrowest in Gas, Electricity and Water (rates in April, 1956, 164, average earnings 170) and widest in Building (rates 153, average earnings 181). The variation for women is peculiar. In some industries the increase in average earnings over the period is actually less than the increase in rates,<sup>1</sup> and in the remainder the divergence is much narrower than for men. Although in nearly every industry the index of rates for women shows an increase as great as or greater than that for men, average earnings of women in all industries except one have risen substantially less than for men. We leave any attempt to explain this and other interesting aspects of the relation between rates and earnings to a later article.

ELY DEVONS.

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<sup>1</sup>This is true in Building, Metals, Engineering, Vehicles, Agriculture, Leather Goods, and Manufacturers of Wood.

## IMPORTANCE OF STATUTORY AND NON-STATUTORY WAGE RATES

Percentage of "Weight" in each Order covered by Statutory and Non-Statutory Rates

TABLE 1

Per Cent

S.I.C. ORDER	TOTAL		MEN		WOMEN	
	Statutory Rates	Non-Statutory Rates	Statutory Rates	Non-Statutory Rates	Statutory Rates	Non-Statutory Rates
TOTAL ... ..	22	78	18	82	46	54
I. Agricultural, Forestry and Fishing ... ..	92	8	92	8	94	6
II. Mining and Quarrying ... ..	—	100	—	100	—	100
III. Treatment of Non-Metalliferous Mining Products ... ..	—	100	—	100	—	100
IV. Chemicals and Allied Trades ... ..	—	100	—	100	—	100
V. Metal Manufacture ... ..	—	100	—	100	—	100
VI. Engineering, Shipbuilding and Electrical Goods ... ..	—	100	—	100	—	100
VII. Vehicles ... ..	1	99	1	99	10	90
VIII. Metal Goods N.E.S. ... ..	53	47	47	53	70	30
IX. Precision Instruments, Jewellery, etc. ... ..	—	100	—	100	—	100
X. Textiles ... ..	12	88	7	93	16	84
XI. Leather, Leather Goods and Fur ... ..	18	82	15	85	42	58
XII. Clothing ... ..	66	34	58	42	72	28
XIII. Food, Drink and Tobacco ... ..	49	51	47	53	55	45
XIV. Manufactures of Wood and Cork ... ..	5	95	5	95	6	94
XV. Paper and Printing ... ..	10	90	7	93	30	70
XVI. Other Manufacturing Industries ... ..	19	81	14	86	34	66
XVII. Building and Contracting ... ..	—	100	—	100	—	100
XVIII. Gas, Water and Electricity ... ..	—	100	—	100	—	100
XIX. Transport and Communication ... ..	14	86	14	86	—	100
XX. Distributive Trades ... ..	37	63	31	69	50	50
XXII. Public Administration and Defence ... ..	29	71	29	71	50	50
CXIII. Professional Services ... ..	—	100	—	100	—	100
XIV. Miscellaneous Services ... ..	73	27	74	26	75	25

**INDUSTRIES FOR WHICH NO RATES ARE INCLUDED IN THE INDEX**  
**TABLE 2**

S.I.C. ORDER	S.I.C. Minimum List Headings Not Covered	Percentage of Order "Weight"
I. Agriculture, Forestry and Fishing	3 Fishing ... ..	...
IV. Chemicals and Allied Trades	36 Mineral Oil Refining ... ..	3
VII. Vehicles	82 Aircraft Manufacture and Repair ... 85 Other Locomotive Manufacture ...	16
VIII. Metal Goods N.E.S.	91 Bolts, Nuts and Screws ... ..	11
XVI. Other Manufacturing Industries	194 Miscellaneous Stationers' Goods ... 199 Miscellaneous Manufacturing Industries	21
XIX. Transport and Communication	222 Other Road Passenger Transport ... 227 Air Transport ... .. 238 Other Transport and Communication	6
XXI. Insurance, Banking and Finance	250 Insurance, Banking and Finance ...	100
XXIII. Professional Services	270 Accountancy ... .. 271 Education ... .. 272 Law ... .. 274 Religion ... .. 275 Other Professional and Business Services	... <sup>(1)</sup>
XXIV. Miscellaneous Services	281 Sport, Other Recreations and Betting 287 Dry Cleaning, Job Dyeing, Carpet Beating, etc. ... .. 291 Private Domestic Service (Resident) 299 Other Services <sup>(1)</sup> ... ..	45

<sup>(1)</sup> The only M.L.H. covered is "Medical and Dental Services."

<sup>(2)</sup> Funeral Direction which is part of this M.L.H. is covered.



NUMBER OF SERIES INCLUDED IN THE INDEX

TABLE 3

S.I.C. ORDER	Rates for Men	Rates for Women	Percentage weight given to Women's Rates in Order
TOTAL ... ..	3,024	828	15.5 <sup>(1)</sup>
I. Agriculture, Forestry and Fishing ... ..	25	11	8.7
II. Mining and Quarrying ... ..	93	—	—
III. Treatment of Non-Metalliferous Mining Products ... ..	275	36	11.6
VI. Chemicals and Allied Trades ... ..	132	42	13.7
V. Metal Manufacture ... ..	62	3	3.1
VI. Engineering, Shipbuilding and Electrical Goods ... ..	162	18	8.2
VII. Vehicles ... ..	176	30	3.8
VIII. Metal Goods N.E.S. ... ..	147	42	25.3
IX. Precision Instruments, Jewellery, etc. ... ..	43	18	20.5
X. Textiles ... ..	258	196	40.9
XI. Leather, Leather Goods and Fur ... ..	36	21	13.1
XII. Clothing ... ..	139	94	54.7
XIII. Food, Drink and Tobacco ... ..	205	58	22.4
XIV. Manufacture of Wood and Cork ... ..	144	35	9.2
XV. Paper and Printing ... ..	233	41	15.4
XVI. Other Manufacturing Industries ... ..	50	33	22.7
XVII. Building and Contracting ... ..	118	4	0.2
XVIII. Gas, Water and Electricity ... ..	243	—	1.2
XIX. Transport and Communication ... ..	151	4	4.8
XX. Distributive Trades ... ..	194	69	31.9
XXII. Public Administration and Defence ... ..	30	2	0.9
XXIII. Professional Services ... ..	20	16	62.4
XXIV. Miscellaneous Services ... ..	88	55	58.1

(<sup>1</sup>) The figure of the proportion of women employed in the labour force is much higher, but average earnings of women overall are only about half those of men.

# WAGE RATE INDEX BY INDUSTRY ALL ADULT WORKERS <sup>(1)</sup>

TABLE 4

AVERAGE 1948 = 100.0

S.I.C. Order	Total All Industries	I	II	III	IV	V	VI			VII	VIII	IX	X	
		Agriculture, Forestry and Fishing	Mining and Quarrying	Treatment of Non-Metallic Mining Products	Chemical and Allied Trades	Metal Manufacture	Total Shipbuilding, Engineering and Electrical Goods	Shipbuilding	Engineering	Vehicles	Metal Goods N.E.S.	Precision Instruments Jewellery, etc.	Total Textiles	Cotton
Weights	1000	56	79	19	18	39	102	14	74	61	25	7	46	14
Annual														
1949	102.8	103.6	100.2	102.9	102.6	103.8	103.8	103.8	104.0	102.8	103.2	101.4	104.7	104.1
1950	104.7	105.2	101.2	104.6	105.8	105.6	105.1	105.7	105.1	103.0	105.2	103.0	108.0	106.1
1951	113.4	112.5	111.7	113.7	115.4	115.6	114.4	114.6	114.8	111.4	113.1	109.7	118.4	118.1
1952	123.4	122.1	123.9	124.5	126.5	125.4	125.8	125.8	126.2	122.0	124.9	119.3	126.5	123.1
1953	129.1	127.8	128.0	130.1	131.4	129.6	131.7	131.8	132.0	128.4	131.5	124.4	131.5	125.1
1954	134.7	133.2	134.1	135.1	136.8	135.6	137.3	137.7	137.7	134.5	136.4	130.1	136.0	131.1
1955	143.3	140.7	143.9	144.5	146.1	147.0	146.3	147.9	145.9	143.1	146.0	137.8	142.6	138.1
Monthly														
1955—Jan.	137.8	133.9	134.2	137.6	140.2	138.7	138.8	139.7	138.8	138.9	141.1	135.3	139.9	137.1
Apl.	141.8	141.2	145.9	142.8	146.0	141.3	147.4	149.6	146.9	138.9	144.5	135.7	140.7	138.1
Oct.	145.6	141.4	147.2	147.3	147.9	150.7	148.2	149.6	147.6	145.7	148.9	139.1	144.3	138.1
Dec.	146.4	141.8	147.2	147.7	148.0	151.5	148.2	149.6	147.7	145.7	150.3	142.6	145.6	138.1
1956—Jan.	147.3	141.8	147.3	147.7	148.1	152.4	148.3	149.6	147.7	145.7	151.6	146.1	146.0	138.1
Feb.	149.8	148.6	157.4	148.8	153.0	152.4	148.8	149.6	148.1	153.9	152.6	147.4	146.5	138.1
Mch.	152.4	150.6	158.7	150.0	154.4	154.6	158.8	161.1	158.4	154.7	153.2	147.4	146.5	138.1
Apl.	153.7	150.6	158.9	153.0	155.3	162.0	159.0	161.1	158.5	156.1	155.0	148.4	147.1	138.1

<sup>(1)</sup> Men and Women, i.e., excluding Juveniles

	XII	XIII	XIV	XV	XVI	XVII		XVIII	XIX	XX	XXII	XXIII	XXIV
and Fur	Clothing	Food, Drink and Tobacco	Manufactures of Wood and Cork	Paper and Printing	Other Manufacturing Industries	Total Building and Contracting	Building	Gas, Water and Electricity	Transport and Communications	Distributive Trades	Public Administration and Defence	Professional Services	Miscellaneous Services
	27	37	17	24	11	114	78	20	98	80	29	12	75
-1	103.7	103.9	104.0	102.9	103.3	102.5	102.3	103.3	100.9	102.2	103.5	103.2	103.3
-6	104.5	105.8	106.4	106.7	104.4	105.2	104.9	106.4	101.7	105.6	104.8	103.2	106.2
-7	111.4	113.9	116.3	117.2	114.4	114.0	113.4	114.7	111.4	114.6	111.4	111.9	111.1
-9	117.9	124.5	129.2	132.6	122.5	124.3	123.8	124.4	119.6	124.1	122.4	120.4	118.1
-2	125.0	130.4	135.4	138.0	127.1	131.0	130.5	130.8	124.4	130.5	126.5	124.5	124.8
-5	132.2	135.4	140.1	140.2	133.1	137.3	136.9	136.2	131.4	135.9	134.3	129.2	128.7
-7	138.9	144.2	148.6	146.9	140.9	145.8	145.3	148.7	140.7	144.3	142.3	138.5	135.3
-3	136.2	140.9	143.5	144.4	134.5	139.7	139.2	143.4	137.0	140.5	137.3	132.9	130.0
-3	137.8	141.7	146.1	145.0	138.9	141.7	140.7	150.4	138.4	143.6	139.1	132.9	134.5
-8	142.3	146.7	153.4	149.4	142.5	148.3	147.9	150.4	141.9	146.7	145.7	142.5	136.9
-2	142.7	147.6	153.6	149.6	149.2	148.6	147.9	150.4	144.6	148.8	145.7	142.5	137.2
-2	145.6	148.8	155.1	155.8	149.5	148.6	147.9	156.2	144.6	148.8	151.9	142.5	138.8
-2	145.8	148.8	155.8	155.8	149.5	151.6	151.1	163.5	145.0	149.3	152.6	142.5	138.9
-2	146.2	150.5	157.1	155.8	150.8	152.2	151.1	163.7	148.3	151.8	157.0	152.9	142.4
-2	148.6	153.8	159.1	156.3	151.4	152.6	151.1	163.7	150.2	153.6	160.0	152.9	142.5

# WAGE RATE INDEX BY INDUSTRIES MEN

TABLE 5

AVERAGE 1948 = 100.0

S.I.C. Order	Total All Industries	I	II	III	IV	V	VI		VII	VIII	IX	X		
		Agriculture, Forestry and Fishing	Mining and Quarrying	Treatment of Non-Metaliferous Mining Products	Chemical and Allied Trades	Metal Manufacture	Total Shipbuilding, Engineering and Electrical Goods	Shipbuilding	Engineering	Vehicles	Metal Goods N.E.S.	Precision Instruments Jewellery, etc.	Total Textiles	Cotton
Weights	1000	61	94	20	19	45	111	16	79	69	24	6	31	8
Annual														
1949	102.7	103.6	100.2	102.9	102.4	103.7	103.7	103.8	103.9	102.8	103.2	101.4	104.7	104.4
1950	104.4	105.2	101.2	104.5	105.6	105.6	104.9	105.7	104.9	102.9	105.3	103.0	107.7	106.5
1951	113.2	112.4	111.7	113.5	115.0	115.5	114.1	114.6	114.3	111.4	113.0	109.7	117.7	118.8
1952	123.4	122.0	123.9	124.5	126.1	125.4	125.1	125.8	125.2	121.9	123.9	119.3	126.2	122.9
1953	128.9	127.7	128.0	130.2	131.0	129.5	130.8	131.8	130.9	127.8	130.4	124.4	131.4	126.3
1954	134.5	133.1	134.1	135.2	136.3	135.5	136.4	137.7	136.4	133.7	135.2	129.9	135.2	131.5
1955	143.4	140.7	143.9	144.9	145.4	146.8	146.2	147.8	145.9	142.4	144.6	137.5	142.0	138.2
Monthly														
1955—Jan.	137.8	133.8	134.2	137.7	139.6	138.6	138.6	139.7	138.7	138.2	139.5	134.9	139.1	137.4
Apl.	142.2	141.2	145.9	143.0	145.4	141.1	147.2	149.6	146.7	140.0	143.4	135.4	140.3	138.2
Oct.	145.7	141.4	147.2	147.7	147.2	150.6	148.0	149.6	147.4	144.9	147.3	138.8	143.8	138.2
Dec.	146.5	141.8	147.2	148.2	147.3	151.4	148.1	149.6	147.5	144.9	148.7	142.1	145.2	138.7
1956—Jan.	147.3	141.8	147.3	148.2	147.5	152.4	148.1	149.6	149.6	144.9	149.8	145.4	145.7	138.7
Feb.	150.5	148.7	157.4	149.3	152.1	152.1	148.6	149.6	149.6	153.2	151.0	146.7	146.6	138.7
Mch.	152.7	150.6	158.7	150.7	153.6	154.5	158.6	161.1	157.9	153.8	153.6	146.7	146.6	138.7
Apl.	154.1	150.6	158.9	153.8	154.5	161.9	158.8	161.1	158.2	155.2	153.6	147.6	146.7	138.7



	XII	XIII	XIV	XV	XVI	XVII		XVIII	XIX	XX	XXII	XXIII	XXIV
	Clothing	Food, Drink and Tobacco	Manufactures of Wood and Cork	Paper and Printing	Other Manufacturing Industries	Total Building and Contracting	Building	Gas, Water and Electricity	Transport and Communications	Distributive Trades	Public Administration and Defence	Professional Services	Miscellaneous Services
	15	35	18	23	11	135	92	23	111	65	34	5	41
102-8	103-4	104-0	102-9	103-3	102-5	102-3	103-3	100-9	102-2	103-5	103-6	104-1	
103-8	105-2	106-4	106-5	104-3	105-2	104-9	106-4	101-6	105-3	104-8	103-6	107-0	
109-8	113-3	116-2	116-8	114-2	114-0	113-4	114-7	111-4	113-4	111-4	112-5	111-5	
116-9	123-7	128-9	131-7	121-9	124-3	123-8	124-4	119-6	123-4	122-4	121-2	118-1	
123-1	129-5	135-2	137-1	126-2	131-0	130-5	130-8	124-3	129-2	126-5	125-4	125-0	
129-3	134-3	139-8	139-2	132-3	137-3	136-9	136-2	130-8	134-7	134-3	130-2	128-4	
135-7	143-1	148-1	145-8	140-0	145-8	145-3	148-7	140-5	143-6	142-3	139-5	135-1	
132-7	139-9	143-2	143-5	133-5	139-7	139-2	143-4	137-5	140-0	137-2	133-9	130-1	
135-0	140-6	145-8	143-9	138-4	141-7	140-7	150-4	138-8	143-0	139-0	133-9	135-5	
138-4	145-4	152-4	148-2	141-2	148-3	147-9	150-4	141-6	146-2	145-7	143-5	136-1	
138-7	146-0	152-5	148-3	148-6	148-6	147-9	150-4	144-3	148-2	145-7	143-5	136-6	
141-2	147-4	154-0	154-1	148-9	148-6	147-9	156-2	144-3	148-2	151-8	143-5	138-8	
141-2	147-4	154-6	154-1	148-9	151-6	151-1	163-5	148-0	148-7	152-5	143-5	139-1	
141-7	149-0	155-9	154-1	150-0	152-2	151-1	163-7	148-1	151-2	156-9	143-5	141-4	
145-1	152-8	157-7	154-5	150-4	152-6	151-1	163-7	149-8	153-0	159-9	154-1	141-5	

# WAGE RATE INDEX BY INDUSTRY WOMEN

TABLE 6

AVERAGE 1948 = 100.0

S.I.C. Orders	Total All Industries	I	III	IV	V	VI		VII	VIII	IX	X		
		Agriculture, Forestry and Fishing	Treatment of Non-Metalliferous Mining Products	Chemical and Allied Trades	Metal Manufacture	Total Engineering, Shipbuilding and Electrical Goods	Shipbuilding	Engineering	Vehicles	Metal Goods N.E.S.	Precision Instruments, Jewellery, etc.	Total Textiles	Cotton
Weights	1000	31	14	14	9	55	1	49	19	29	8	123	48
Annual													
1949	103.4	103.8	102.4	103.6	104.7	104.4	103.9	104.6	103.6	103.2	100.2	104.7	104.0
1950	106.0	105.5	105.5	106.9	107.0	106.4	105.5	106.6	104.5	105.1	101.5	108.3	106.0
1951	114.4	113.3	114.5	117.5	119.4	118.8	114.6	119.4	112.4	113.5	108.7	119.1	118.0
1952	123.7	122.7	124.4	128.3	133.5	134.4	124.0	135.2	124.6	128.0	118.3	127.0	123.0
1953	130.5	128.4	129.7	133.5	141.9	142.1	124.0	143.1	141.4	135.5	123.8	132.1	126.0
1954	135.8	133.8	134.4	140.2	149.0	148.6	135.3	149.5	153.8	140.7	130.5	136.8	131.0
1955	143.6	140.9	141.9	150.0	163.2	159.8	147.6	160.7	161.9	150.1	139.3	143.3	138.0
Monthly													
1955—Jan.	139.0	134.3	136.3	144.1	151.4	151.1	139.0	152.0	157.1	145.8	137.8	140.9	132.0
Apl.	141.8	141.4	141.3	149.9	163.2	161.3	149.3	162.1	157.8	147.6	137.8	141.7	138.0
Oct.	146.1	141.4	144.0	152.4	163.2	161.8	149.3	162.7	165.9	153.7	140.0	145.0	138.0
Dec.	147.1	141.8	144.0	152.6	161.3	161.9	149.3	162.7	165.9	155.3	145.2	146.1	138.0
1956—Jan.	148.2	141.8	144.0	153.0	163.2	161.9	149.3	162.7	165.9	157.1	151.2	146.4	138.0
Feb.	149.0	148.4	144.6	159.0	163.2	163.2	149.3	163.1	176.3	157.3	152.5	147.0	138.0
Mch.	151.9	150.6	144.7	159.9	174.2	173.8	161.0	174.7	176.3	159.0	152.5	147.0	138.0
Apl.	152.8	150.6	147.2	160.9	174.2	174.1	161.0	175.1	177.0	159.0	152.4	147.3	138.0

XII	XIII	XIV	XV	XVI	XVII		XIX	XX	XXII	XXIII	XXIV
Clothing	Food, Drink and Tobacco	Manufacture of Wood and Cork	Paper and Printing	Other Manufacturing Industries	Total Building and Contracting	Building	Transport and Communications	Distributive Trades	Public Administration and Defence	Professional Services	Miscellaneous Services
95	50	9	26	17	1	1	30	161	2	47	255
104.4	105.4	104.4	103.3	103.5	103.3	103.3	101.9	101.9	103.5	102.9	102.8
105.0	107.8	106.6	107.8	104.5	106.8	106.8	102.7	106.3	104.8	102.9	105.7
112.7	115.7	117.5	119.1	115.3	113.4	113.4	113.1	115.6	114.1	111.5	110.9
118.5	127.1	133.0	136.8	124.1	127.5	127.5	119.0	126.1	126.2	119.9	118.1
126.4	133.4	138.5	142.8	130.1	136.5	136.5	127.9	133.3	130.6	124.0	124.7
134.5	139.2	144.0	145.4	135.5	141.7	141.7	133.9	138.5	140.0	128.6	128.8
141.6	147.8	154.0	152.9	144.1	162.0	162.0	145.2	146.0	145.7	137.9	135.3
139.0	144.3	147.6	149.6	137.8	152.6	152.6	142.0	141.8	142.5	132.3	130.0
140.0	145.5	149.7	151.4	140.8	154.9	154.9	142.0	145.2	142.5	132.3	132.9
145.5	150.8	166.0	155.9	147.0	165.8	165.8	146.0	148.1	147.9	141.9	137.5
146.1	152.9	166.1	156.0	151.5	165.8	165.8	152.8	150.5	147.9	141.9	137.5
149.3	153.4	169.0	165.2	151.7	165.8	165.8	152.8	150.5	160.5	141.9	138.8
149.6	153.4	169.7	165.2	151.7	170.3	170.3	152.8	150.6	160.5	141.9	138.8
150.0	155.6	171.0	165.2	153.7	170.3	170.3	152.8	153.2	160.5	152.2	142.9
151.5	156.7	175.2	165.3	154.8	170.3	170.3	159.3	155.1	168.4	152.2	142.9

**MINISTRY OF LABOUR INDEX OF WAGE RATES  
COMPARED WITH  
THE "MANCHESTER" INDEX**

1948 = 100 <sup>(1)</sup>

**TABLE 7**

	ALL INDUSTRIES							MANUFACTURING INDUSTRIES		
	M. of L. Index		Manchester Index	M. of L. Index	Manchester Index	M. of L. Index	Manchester Index	M. of L. Index		Manchester Index
	All Workers including Juveniles	Adult Workers	Adult Workers	MEN		WOMEN		All Workers including Juveniles	Adult Workers	Adult Workers
Annual										
1949	102.7	102.7	102.8	102.5	102.7	103.3	103.4	103.4	103.3	103.6
1950	104.7	104.6	104.7	104.3	104.4	106.0	106.0	105.2	105.1	105.3
1951	113.5	113.3	113.4	113.0	113.2	115.0	114.4	115.1	114.9	114.4
1952	122.8	122.5	123.4	122.2	123.4	124.1	123.7	124.9	124.5	124.9
1953	128.5	128.1	129.1	127.6	128.9	130.8	130.5	130.6	130.1	130.6
1954	134.1	133.6	134.7	133.2	134.5	136.2	135.8	136.1	135.5	136.0
1955	143.2	142.7	143.3	142.4	143.4	144.2	143.6	145.0	144.4	144.6
Monthly										
1955										
January	137.9	137.4	137.8	136.8	137.8	140.6	139.0	139.3	138.7	139.4
April	143.2	142.8	141.8	142.7	142.2	143.4	141.8	144.8	144.2	142.8
October	144.9	144.4	145.6	144.2	145.7	145.9	146.1	147.0	146.3	147.1
December	145.7	145.2	146.4	144.8	146.5	147.4	147.1	147.6	147.0	147.8
1956										
January	147.6	147.0	147.3	146.7	147.3	149.0	148.2	149.0	148.3	148.7
February	149.1	148.6	149.8	148.3	150.5	150.2	149.0	149.5	148.8	150.4
March	153.1	152.5	152.4	152.3	152.7	153.6	151.9	155.3	154.5	153.4
April	155.0	154.3	153.7	154.2	154.1	154.8	152.8	156.5	155.7	155.3

<sup>(1)</sup> The original Ministry of Labour Index for the period to January 1956 is based on June 1947 = 100, and from February 1956 on January 1956 = 100. We have converted these to 1948 = 100, for comparison with our Index.





**INDEX OF AVERAGE WEEKLY EARNINGS BY INDUSTRIES  
ALL WORKERS <sup>(1)</sup>**

**TABLE 8**

AVERAGE 1948 = 100.0

	I	II	III	IV	V	VI			VII	VIII	IX
S.I.C. Orders	( <sup>2</sup> ) Agriculture, Forestry and Fishing	Mining and Quarrying	Treatment of Non-Metallic Mining Products	Chemicals and Allied Trades	Metal Manufacture	Total Engineering, Shipbuilding and Electrical Goods	Shipbuilding	Engineering	Vehicles	Metal Goods N.E.S.	Precision Instruments Jewellery, etc.
Annual ( <sup>3</sup> )											
1949	104.4	103.5	105.3	105.3	102.9	103.5	97.2	104.2	101.2	104.9	105.5
1950	107.0	108.2	109.8	111.0	107.9	107.9	99.7	109.1	106.5	110.8	110.2
1951	114.5	120.8	121.6	122.4	117.0	117.7	109.1	120.1	113.8	119.3	118.8
1952	123.1	133.2	130.9	130.1	127.5	129.8	122.0	131.5	123.6	130.4	128.8
1953	131.0	137.6	139.5	140.1	133.1	137.6	128.4	139.0	133.1	138.0	137.0
1954	139.1	145.8	148.4	149.1	143.7	147.2	136.1	150.3	143.0	147.6	144.7
1955	149.4	155.3	161.2	163.1	157.2	160.4	151.1	163.4	156.4	161.2	157.2
1955—Apl.	147.0	154.7	158.8	161.4	154.9	159.2	150.3	162.0	155.1	159.1	156.2
Oct.	151.8	165.5	163.5	164.7	159.4	161.5	151.9	164.9	157.7	163.3	162.5
1956—Apl.	156.1	175.0	170.8	172.9	169.4	173.3	168.2	175.4	165.0	170.9	164.4

<sup>(1)</sup> Including Juveniles.<sup>(2)</sup> The "Annual" figures are averages of the figures for April and October.<sup>(3)</sup> The figures of earnings cover Agriculture only, and are a combination of the separate indexes for men and women weighted by wage-bills in 1948.<sup>(4)</sup> Only that part of the order covered by the Ministry of Labour's Earnings Enquiries.

X		XI	XII	XIII	XIV	XV	XVI	XVII		XVIII	XIX	XXII
Total Textiles	Cotton	Leather, Leather Goods and Fur	Clothing	Food, Drink and Tobacco	Manufacture of Wood and Cork	Paper and Printing	Other Manufacturing Industries	Total Building and Contracting	Building	Gas, Water and Electricity	Transport and Communications	Public Administration and Defence
106.5	105.9	102.8	107.3	105.2	104.9	105.9	102.3	105.0	105.2	103.3	104.4	107.5
113.2	110.6	106.6	111.3	108.6	111.0	110.9	108.1	111.3	111.1	107.5	106.9	109.6
125.5	126.1	114.2	118.2	118.0	123.1	122.0	119.4	125.4	124.6	118.8	118.2	119.7
128.0	120.9	118.4	123.3	127.1	130.9	134.1	125.8	134.5	133.9	127.9	126.2	129.5
140.1	134.3	127.3	133.0	133.6	139.4	144.2	135.6	143.8	143.4	134.2	132.6	136.0
148.3	144.0	133.1	138.1	141.6	147.4	152.1	145.0	152.2	151.3	142.4	143.0	142.2
156.5	148.2	142.8	147.5	153.8	158.3	164.5	157.4	166.9	166.1	158.8	159.8	153.2
149.4	146.9	139.2	145.0	151.3	151.7	160.9	153.9	166.3	165.4	158.5	157.8	149.7
158.9	149.4	146.4	150.0	156.2	164.8	168.1	160.8	167.5	166.7	159.0	161.8	156.7
157.7	150.8	147.9	157.3	163.8	164.2	177.4	165.7	181.9	181.6	170.1	170.8	167.5

# INDEX OF AVERAGE WEEKLY EARNINGS BY INDUSTRIES MEN

TABLE 9

AVERAGE 1948 = 100.0

	I	II	III	IV	V	VI			VII	VIII	IX
S.I.C. Order	( <sup>1</sup> ) Agriculture, Forestry and Fishing	Mining and Quarrying	Treatment of Non-Metalliferous Mining Products	Chemical and Allied Trades	Metal Manufacture	Total Engineering, Shipbuilding and Electrical Goods	Shipbuilding	Engineering	Vehicles	Metal Goods N.E.S.	Precision Instruments Jewellery, etc.
Annual ( <sup>1</sup> )											
1949	104.4	103.8	105.1	104.8	103.0	102.7	97.2	103.8	101.6	103.7	104.6
1950	107.2	108.3	110.3	110.3	108.0	107.5	100.0	109.1	107.4	110.1	110.4
1951	114.6	121.4	122.9	122.0	117.4	118.2	109.5	120.5	115.0	118.9	119.0
1952	123.4	134.3	131.6	128.8	127.9	130.4	122.5	132.2	124.8	129.4	128.4
1953	131.2	139.1	140.0	139.3	133.2	138.2	129.3	139.5	134.6	136.6	137.2
1954	139.8	147.1	149.5	149.8	144.0	149.1	137.8	151.4	145.1	147.9	146.4
1955	150.2	156.7	162.9	164.5	157.7	163.6	153.1	165.2	159.0	163.0	158.8
1955—Apl.	147.8	156.9	160.5	162.8	155.5	162.2	152.4	163.6	157.7	160.6	155.1
Oct.	152.6	166.6	165.2	166.2	159.9	164.9	153.7	166.7	160.4	165.3	162.4
1956—Apl.	156.7	173.1	172.3	173.8	169.6	176.3	170.3	177.1	167.2	171.7	169.2

(<sup>1</sup>) The "Annual" figures are averages of the figures for April and October.

(<sup>2</sup>) The figures of earnings cover Agriculture only.

(<sup>3</sup>) Only that part of the order covered by the Ministry of Labour's Earnings Enquiries.



X		XI	XII	XIII	XIV	XV	XVI	XVII		XVIII	XIX	XXII
Total Textiles	Cotton	Leather, Leather Goods and Fur	Clothing	Food, Drink and Tobacco	Manufacture of Wood and Cork	Paper and Printing	Other Manufacturing Industries	Total Building and Contracting	Building	Gas, Water and Electricity	Transport and Communications	Public Administration and Defence
											( <sup>c</sup> )	( <sup>c</sup> )
106·2	105·8	104·3	107·0	105·2	105·6	107·2	103·0	104·5	104·5	103·5	102·9	104·2
113·1	110·3	111·0	111·1	108·7	112·1	113·3	109·0	110·3	109·8	108·0	105·4	106·0
125·1	126·0	119·4	117·7	119·0	124·3	123·5	120·9	124·5	123·6	119·4	116·0	116·6
128·2	120·0	123·7	123·7	127·6	131·6	133·4	125·2	133·6	133·0	128·5	125·0	126·5
141·8	133·5	135·7	134·2	134·9	140·3	144·5	136·6	143·0	142·6	134·4	131·2	132·9
150·7	144·4	142·9	138·7	144·8	148·9	153·4	148·2	151·6	150·7	142·6	142·6	139·6
159·4	148·1	154·2	149·7	157·7	159·1	166·4	160·9	166·2	165·4	159·1	158·6	151·1
156·2	146·7	149·4	147·4	154·5	153·1	162·8	157·9	165·6	164·8	158·7	156·5	147·8
162·5	149·4	158·9	152·0	160·8	165·0	170·0	163·8	166·7	166·0	159·4	160·8	154·4
164·4	151·5	157·7	160·7	167·6	164·3	177·7	166·9	181·0	180·7	170·4	169·4	165·8

# INDEX OF AVERAGE WEEKLY EARNINGS BY INDUSTRIES WOMEN

TABLE 10

AVERAGE 1948 = 100.0

	I	II	III	IV	V	VI			VII	VIII	IX
S.I.C. Order	( <sup>1</sup> ) Agriculture, Forestry and Fishing	Mining and Quarrying	Treatment of Non-Metalliferous Mining Products	Chemicals and Allied Trades	Metal Manufacture	Total Engineering, Shipbuilding and Electrical Goods	Shipbuilding	Engineering	Vehicles	Metal Goods N.E.S.	Precision Instruments Jewellery, etc.
Annual ( <sup>1</sup> )											
1949	104.3	110.5	107.3	105.4	103.9	105.9	101.3	106.1	106.0	104.8	106.5
1950	105.2	116.9	110.1	111.1	108.1	110.1	103.0	109.9	111.1	109.2	110.4
1951	113.1	122.6	119.7	121.5	117.0	118.6	110.7	118.9	116.8	117.8	117.8
1952	120.2	135.1	127.7	133.5	128.9	132.5	122.8	132.8	129.1	130.0	127.9
1953	128.4	144.0	133.9	141.6	134.3	142.0	133.6	140.9	139.1	137.2	135.9
1954	132.0	150.4	143.0	146.0	147.7	151.3	139.4	152.1	148.0	146.0	144.3
1955	141.1	161.2	152.7	158.3	158.0	162.9	148.9	163.3	158.4	156.7	155.6
1955—Apl.	138.4	158.6	151.8	156.1	156.9	162.5	147.1	162.8	157.6	155.6	154.2
Oct.	143.8	163.7	153.6	160.4	159.1	163.3	150.7	163.7	159.3	157.7	156.9
1956—Apl.	149.4	170.7	155.7	167.0	167.6	171.4	165.7	173.0	164.0	164.9	161.0

(<sup>1</sup>) The "Annual" figures are averages of the figures for April and October.

(<sup>2</sup>) The figures of earnings cover Total Females in Agriculture only.

(<sup>3</sup>) Only that part of the order covered by the Ministry of Labour's Earnings Enquiries.

Total Textiles	X	XI	XII	XIII	XIV	XV	XVI	XVII		XVIII	XIX	XXII
	Cotton	Leather, Leather Goods and Fur	Clothing	Food, Drink and Tobacco	Manufactures of Wood and Cork	Paper and Printing	Other Manufacturing Industries	Total Building and Contracting	Building	Gas, Water and Electricity	Transport and Communications	Public Administration and Defence
106.3	105.0	104.2	107.5	106.2	106.0	102.8	103.5	105.5	112.2	101.8	103.8	111.1
112.6	109.9	108.4	112.0	110.2	112.4	108.4	108.4	106.5	112.3	99.1	105.4	115.4
125.6	125.7	116.8	118.6	119.7	122.6	117.3	117.8	114.8	121.0	109.8	118.0	123.5
126.0	120.6	123.4	122.6	129.4	133.8	133.9	126.2	123.4	130.0	120.6	128.4	135.9
139.6	134.9	132.6	133.9	136.7	140.7	142.6	133.3	128.1	134.8	127.4	133.9	142.2
146.9	145.0	139.7	138.9	143.2	147.2	147.6	141.9	134.0	140.9	133.1	144.6	149.0
153.1	149.0	148.7	148.2	155.1	157.8	155.9	150.2	145.1	153.9	144.5	157.8	158.7
150.4	148.2	145.5	146.0	152.4	149.2	153.6	147.7	142.2	151.5	144.7	157.0	154.2
155.8	149.7	151.8	150.3	157.7	166.3	158.1	152.6	147.9	156.3	144.2	158.7	163.1
157.3	150.6	154.3	157.1	164.1	164.2	169.1	157.7	158.4	168.7	160.3	168.6	174.2

## Some Reflections on the Philosophy of Prices

Why did the hunters exchange a beaver for two deer? Each could equally well have caught what he wanted for himself. There was no property in rights to ranges in the forest, and Adam Smith clearly implies that there was no special aptitude or special exertion involved in either kind of chase. Exchanges can have come about only when there was a chance discrepancy between the catch and the needs of particular hunters, and they evidently agreed to swap on terms reflecting the hunting time usually required for each quarry because that seemed the right and fair thing to do.

Regular exchanges entail specialisation. In the early and rude state of society there was trade in natural materials—salt, iron, coral—which entails property, in some form or other, in the sources of supply, and there was trade also in the products of inherited skill, which entails a kind of property in the lore of a craft.

When trade is of this sort, prices established in the market (given output per man year of each type of commodity) determine the income of the owners of the specialised factors of production. Such a situation persists to the present day where groups of producers depend for their living upon the sale of a particular commodity whose production requires particular natural resources.

The case is very different when, as in manufacturing industry, the basis of specialisation is merely the economies of scale. Any group of producers can become specialists in any commodity, and the means of production, being man-made, can be designed to fit any commodity. At a moment of time each set of factors may be tied to a single product, or a narrow range of products, but if income in that line is less than can be earned elsewhere they will gradually move out of it until earnings rise for those who remain; and where incomes are higher than usual, factors will be attracted in, till the level of earnings is brought down. Thus, generally speaking and taking it very roughly, subject to whatever necessary qualifications,



the wage rate for labour requiring any particular length of training time and the rate of profit on capital exposed to any particular degree of riskiness tends to be the same in all lines of production. The prices of commodities depend upon their costs of production, that is upon the incomes of their producers, instead of the incomes of producers depending upon the prices of the commodities.

The distinction between the two types of prices is not at all noticeable in England because the great bulk of our primary production takes place abroad and what there is within our own shores—coal-mining, agriculture—has been more or less completely assimilated to industry in its manner of organisation.

Perhaps for this reason (for English conditions have left a mark upon the whole of economic theory) the distinction between the two types of price system has never been much stressed in the teaching of economics. They are expounded in two models (which for convenience may be labelled the Walrasian, or exchange-economy model, and the Marshallian, or wage-economy model) without their respective spheres of operation being clearly demarcated, or indeed, often noticed at all. This largely accounts for the state of confusion which prevails to-day in the philosophy of prices.

#### AN EXCHANGE ECONOMY

To draw the distinction as sharply as possible, let us postulate (for the first model) an economy, isolated from the rest of the world, in which each family owns its own means of production and each has facilities for producing one commodity which is quite distinct from all others, in its use as well as in its manner of production. One family, say, owns a vineyard; another owns a fish-pond; a third has inherited the secrets of the potter's craft. There are a sufficient number of families with each kind of speciality to make supply competitive. All meet once a week to exchange last week's products to provide for next week's consumption.

In such a market there is no meaning in the general price level. The fishers are interested in the purchasing power of fish, the weavers in the purchasing power of cloth, and so on. To introduce a single *numeraire* is only confusing.

The demand and supply of each commodity depends upon the price of every other. Let us consider the situation from the standpoint of the producers of one of them. To aid imagination, let us say that the commodity we have chosen is a mat of a standard type which is traditional in this community. It can be woven from grass easily obtainable in the surrounding jungle. The special manner of manufacture is a craft which has to be learned in childhood, so that only mat-making families can make mats.

To find what governs the income of mat-makers we want to know the conditions of demand for mats in terms of commodities in general. This raises the usual problem of the ambiguity of a unit of things in general. Let us take as the unit a "basket" of commodities (excluding mats) made up in the proportions in which each commodity is supplied to the market. The basket then represents the purchases (other than mats) of a representative buyer. Individual buyers with non-average tastes or incomes will be purchasing different baskets, in some of which each commodity appears in a greater proportion and in some in a smaller proportion than in the representative basket.

This provides a unique solution if we may assume that the supply of everything other than mats is perfectly inelastic—the same quantity of each commodity is brought to market whatever its expected price in terms of other commodities. We can then draw a demand curve for mats in terms of baskets of other commodities in general.

It is natural to suppose that there is a maximum price above which mats cannot be sold, for when they become too dear even the richest consumers will do without them or botch up substitutes for themselves. At the other extreme, there is a maximum quantity which would be taken at a price of next-to-nothing in terms of other commodities. Total receipts of other goods obtained by selling mats therefore rise at first as the quantity of mats offered increases, reach a maximum at the point of unit elasticity of demand, and then fall off towards zero at the saturation point. (There may, of course, be bulges and twists in the curve, but this does not affect the main point).

What happens when we remove the assumption that everything else is in perfectly inelastic supply? A rise in the purchasing power of their own commodity over mats may stimulate some producers to bring more of their particular goods to market. Others may react by offering less, since their needs can now be met with a smaller expenditure of effort, or they may prefer to consume their own product when their income is greater. If the supplies of all commodities were affected in the same way, the composition of the "basket" would remain unchanged. A positive elasticity of supply of things in general makes the demand for mats more elastic, checking the fall in price level which accompanies an increase in the quantity offered, and a negative elasticity of supply makes the demand curve less elastic.

When different sets of producers react differently the composition of the basket alters with the price of mats and our demand curve becomes ambiguous. Each price has to be expressed as a bracket of index-numbers. This is a tiresome complication but not a very important one. We may rule it out by assuming that from the point of view of mat-makers the change in the purchasing power of mats that accompanies a given increase in their supply is pretty much the same whether it is measured in terms of baskets of things in general obtainable at the higher price or of baskets obtainable at the lower price.<sup>1</sup>

On this basis we can continue to use the demand curve for mats and its corollary, the total receipts curve.

Now it is easy to show that when the market is in equilibrium, with a stable set of prices which has been ruling for some time, all the mat makers are receiving an income at least sufficient to cover the necessities of life. If the quantity of mats offered were such that total receipts from selling them were too small to support the number of mat-makers in existence, some of them must be in course of going out of existence, one way or another, and the market is not in equilibrium. The same argument applies to each group of

<sup>1</sup>Was this what Marshall really meant by the famous assumption that the marginal utility of money is independent of the price of the commodity for which a demand curve is to be drawn?

producers. When the market is in equilibrium the supply of each commodity, and the number of families living from it, is stable, and the pattern of prices is such that everyone is making a living.

The concept of equilibrium is purely formalistic. If we find a market in equilibrium, it follows that all non-equilibrium elements have already been eliminated from it. There is certainly no general presumption, when we start from a given number of commodities with given numbers of producers specialised to each, that there is an equilibrium pattern of prices at which they can all live. Nor, when a change occurs in conditions of demand or supply, after one equilibrium position has been established, is there any presumption that a new equilibrium can be found in which all the families flourishing in the first position can still make a living.

This is the most serious problem which the model brings to light, but it is not the only one. Let us put it to rest for the moment by postulating that there is an equilibrium pattern of prices at which all the families could live, and that no change is taking place in their numbers, tastes or productive capacity.

The existence of such an equilibrium position does not guarantee that it will be established. Walras got out of the difficulty by postulating that the sellers find the equilibrium position before they begin to trade, by "crying prices." This is a rather back-foremost way of drawing attention to the fact that there is an arbitrary element in the receipts from a day's trading in any particular commodity (it depends on how many mugs bought early at a price above the day's average, or how many mugs sold early at a price below).

Every demand depends upon every other price. If the mat makers are exceptionally heavy drinkers, the demand for liquor will be high on the days when they have been lucky.

This would not be of much significance if supplies were perfectly inelastic, but when the quantity of a commodity brought to market is influenced by its expected purchasing power, and when expectations are based on the prices ruling in the last market, oscillations are set up which inter-act with each other, and may never sort themselves out into a self-perpetuating equilibrium.



Now let us leave this problem behind us, in turn, and postulate not only that there is an equilibrium pattern of prices, but that it has been established and is continuing to rule without any disturbance.

We can then examine our community of specialised producers and compare the income of one family with another. Taking the output of an average man-day of work as the unit for the physical quantity of each commodity, the real income of each group of producers in terms of commodities in general depends upon the price level in terms of their product, and this depends upon its scarcity relatively to demand. Those who belong to groups which are large in relation to the demand for their speciality have a low income per head and those who belong to groups with relatively limited productive capacity enjoy a high income.

It is strange that the case in favour of *laissez-faire* is often expounded in terms of this model, for it is precisely this model which enables us to see why that doctrine has always been obstinately resisted by the mass of mankind.

A system in which the income of an individual depends upon the value of the marginal product of the group to which he belongs, rather than the nature of the work that he has to do, is out of line with ordinary notions of what is fair and reasonable. The perpetual oscillations in real income in a market seeking equilibrium are a great nuisance. The bitter misfortune that from time to time falls upon a group of which some members have become redundant to demand is generally felt to be intolerable. And so is the situation in which a particular group can hold the rest to ransom when their particular product is in scarce supply.

It is noticeable that, wherever there are political means to curb it, the free market system is never allowed to operate undisturbed in conditions which approximate to those of the model. We may take the model at its face value as applying to a community of peasants and artisans. Our account of it as a competitive market economy is then highly unrealistic, for such communities are generally organised on a system of rights and obligations. There may be trade in a few exotic articles, say, salt or coral, that are produced outside the jurisdiction

of the community, but within it market principles are not allowed to operate.

If we apply the model to the pre-capitalist world in general, we know that economic policy was based on the notion of the Just Price, not on the laws of supply and demand.

If we identify our groups of specialised producers with nations, we know very well how each uses whatever means it can to prevent its citizens from suffering a loss of income, by manipulating its offers and demands in world trade. If we identify the groups with professions that sell their services (private doctors, solicitors) we know how they regulate the business so as to make it possible for their members to gain a satisfactory livelihood.

If we identify them with the primary producers who are not (like the isolated peasant society) able to regulate their own economy by their own traditions but are exposed to the operation of the world market, we know how desperate means are sought from time to time to ward off disaster, and how (though for the most part vainly) they cry out to be saved from the continuous oscillation of their prices.

In all these cases the sympathies of the general public are on the side of regulation and against the free play of supply and demand. Even the economists have to find escape clauses to allow them to reconcile their doctrines with common sense and common humanity. The model cannot be used to expound the case in favour of *laissez faire*, but it is helpful to understanding why the case has been found generally unconvincing.

#### A WAGE ECONOMY

The other model operates in quite a different setting. It is devised to fit an economy in which workers are employed by capitalist firms for wages. The essential distinction between the two models lies in the basis of specialisation—natural conditions in the one case and economies of scale in the other—but it is no accident that they are associated with different economic systems, for capitalism and the economies of scale grew up together.

A wage economy must be a monetary economy, for it is an essential feature of its operation that wages are contracted

in advance in terms of generalised purchasing power, not as a share in the product. Given money wage rates, the function of the general price level is to distribute the proceeds of industry between the suppliers of the factors of production. The relation of the general price level in terms of money to wages in terms of money, that is, the level of real wage rates, the rate of profit on capital and the level of rents for natural resources, depend upon the manner in which the macro-economic forces are working. This does not concern us here. All we need to know is that in the system as a whole certain levels of real wages and of the rate of profit have been established.

To make the contrast with the first model as sharp as possible we will suppose that there is a very high degree of mobility of labour between different lines of production. (Training may be required for particular skills, but the same skill is needed for processes entering into every kind of production). All available labour is employed. The economy has been developing smoothly without disappointment of expectations, so that capital is everywhere actually earning the profits in the light of which investments were made. There are no monopolistic barriers to entering into any market or any line of production. The attachment of particular families to landed estates has long since dissolved and land is a money-earning asset like any other.

No individual's income is then in any way affected by the pattern of demand. Workers of a given grade of skill (which may be measured by the time required for training) get the same wage, whatever their work is contributing to produce. The rate of profit on capital may vary with the riskiness of investment, but not with the pattern of demand for different commodities. An individual piece of land earns a rent which is affected by the demand for the commodities which it is suited to produce, but the owner bought it at a price which reflects its money yield, and from this point of view the yield on his wealth is the same as it would have been if the pattern of demand has been quite different.

There are plenty of objections to be raised about the distribution of income between workers and property owners, but as between one commodity and another this system is perfectly

fair. The prices of commodities have to be such as to cover their costs, that is, to pay for their factors of production at the ruling rate for each, and the return to each unit of a given factor is the same whatever it is contributing to produce. This is in marked contrast to the first model, in which the receipts of individual producers depend upon the pattern of supply and demand for the particular commodities that each is able to produce.

### THE SHORT PERIOD

When long-period equilibrium obtains, in the sense that supply and demand balance in every market at prices for all commodities which cover costs of production, including profit at the generally ruling rate on the value of capital (long-lived capital goods being reckoned at historic cost appropriately amortised), then the contrast between the model of the wage economy and the model of the exchange economy is clear and definite.

When the wage economy is out of equilibrium, in the sense that some unforeseen change has occurred to which the economy has not adjusted itself, the contrast is not so easy to see, for it is impossible for mobility to be perfect in face of unforeseen changes. At any moment factors of production which have become specialised to what they have recently been doing are caught wherever they may be. For the time being they are in very much the same situation as obtains in the first model, where specialisation is based on natural differences.

To explore the implications of this, let us suppose that there has been a once-for-all switch of demand to one group of commodities, the Ups, from another group, the Downs, while the main mass of expenditure is unaffected. If there are no permanently scarce factors involved so that supply of each commodity is perfectly elastic in the long run, then we know that, after sufficient time has gone by (if no further disturbance occurs), prices, wages and the rate of profit will be back to what they were before the change occurred. The only difference will be that the productive capacity devoted to Ups has increased and that devoted to Downs decreased.



Meanwhile, if competitive conditions obtain, the prices of Ups are up and the prices of Downs down. From a short period point of view the supply of specialised plant is absolutely inelastic. Since labour is not perfectly mobile at short notice, the supply of workers to each group of firms is somewhat inelastic. The situation is therefore in one respect similar to the conditions of the first model. But in another respect it is quite different. In the first model there are neither wages nor profits, because the distinction between them has not yet been made, and it cannot throw any light on the manner in which the change in receipts for Ups and for Downs should be distributed between the workers and capitalists concerned.

Many economists seem to believe that it is right and proper that the wages of workers in the Down lines should be cut and in the Up lines raised.<sup>1</sup> This seems to me to be due to an ill-considered analogy with the first model. It is entirely contrary to the spirit of the second model. It happens, indeed, in reality often enough, but this is because reality fails to live up to the specifications of the model.

Let us consider what happens when relative wage rates swing with demand. First of all the workers who were already in Up lines now enjoy a higher rate of pay, for which there is no justification either economic or moral. It is a pure bonus due to the fact that there are too few like them. Similarly the workers who are still to remain employed on Downs suffer a cut in wages at which they are justifiably indignant, for it is no fault of their's that there were recently too many other people in the trade.

Secondly, the restoration of equilibrium is delayed, for the swing of profits is reduced by the swing in wage rates. Old plant is kept going longer in Downs, and the attraction of investment in Ups is reduced compared to what would have happened if wage rates had been kept constant and the full impact of the change in demand had fallen upon profits.

The swing of wages is sometimes justified as being helpful to the movement of labour from points where it has become

<sup>1</sup>See for example Professor Meade, *Planning and the Price Mechanism*, p. 73, and Professor Robertson, *Wages* (Stamp Memorial Lecture, 1954), p. 15.

redundant to points where it is needed. Some differential may be necessary to get workers to move readily. But they cannot move faster than jobs are offered to them. The offer of additional employment in Ups (above what can occur with existing plant) must await the expansion of productive capacity, and this is likely to occur faster the less wages are raised. Correspondingly, a cut of wages in Downs, in so far as it softens the impact upon profits of the fall in demand, delays the unemployment which must ultimately push workers to where they are needed. Immobility of labour causes the system to work lamely and the proper remedy is to create conditions in which less mobility is required and more is forthcoming. The responsiveness of supply to demand (which is supposed to be the great merit of the private-enterprise system) is impaired if relative wage rates have to be appreciably altered to get workers to move.

Finally, since wage rates in the long run must get back into their equilibrium alignment, any departure from their long-run values in response to short-period events lays up trouble and friction for the future.

Relative wages are in fact affected by demand, and the pattern of wages at any moment is deeply marked by the scars of past history, but this should be recognised as a blemish upon the system not treated as part of its proper operation.

The proper working of the system in face of changes in the pattern of supply and demand depends upon mobility of labour between lines of production. Mobility may be achieved without anyone even noticing it, as when a single firm straddles both Up and Down markets and the response of supply to demand is made merely by altering the proportions in which various commodities are produced under one roof. Mobility is generally found to be high (provided that the over-all demand for labour is buoyant) where Up and Down trades occupy the same town. It is low where a whole district is specialised on a single line of production. Then the economy has only too much in common with the first model, which, as we saw, exposes the drawbacks of *laissez faire* and exhibits the justification for interference with the mechanism of a free market.

### FULL COST

It is to be observed that the whole mechanism of the model turns upon competition. Prices of commodities are given by the market and it is the business of the firms to try to produce any given output at the lowest costs and to make the selection of commodities which yields the greatest profit. It is by this means that supply is brought into line with demand. If the firms can incur costs and then charge prices to cover them, the discipline of the market ceases to operate.

In equilibrium a uniform rate of profit obtains, but this is not because anyone has decided to make it so. Prices are adjusted in such a way as to cover costs including profits at the ruling rate on the capital committed to each line only because a line where this was not so would be starved of investment.

In much of the discussion of prices that goes on nowadays this essential feature of the model is repudiated.

Competition can never be perfect in manufacturing industry, and the setting of prices cannot but contain an element of conscious policy. The doctrine which is often preached nowadays is that firms usually do, and always should, behave as though they were competitive, thus making the imperfection of competition quite harmless.<sup>1</sup>

But what does competitive behaviour consist of? When the model exhibits long period equilibrium in ideal competitive conditions, all capital equipment is operated at its designed capacity and the rate of profit being enjoyed and expected is everywhere equal. It is impossible to live up to the specification of competitive equilibrium both in respect to full-capacity operation of plant and in respect to normal profits unless equilibrium conditions actually obtain. The modern doctrine seems to be that it is normal profits which is chosen as the object of policy. On this view (to return to our example of a once-for-all partial switch in demand) the Up firms keep prices below the level corresponding to demand, but if they do so, it follows that they must operate some kind of unofficial rationing system among would-be customers. The Downs allow output to fall below capacity while maintaining prices or even raising them "to cover the overhead."

<sup>1</sup>See for example P. W. S. Andrews, *Manufacturing Business*, p. 28.

This in fact is not at all like competitive behaviour, for competitive behaviour means, first, that prices equate demand to available supplies, and second, that plant is used to capacity so long as receipts are sufficient to cover running costs.

The new doctrine (unintentionally, no doubt) substitutes for the rigours of the free-market system a kind of insurance scheme, firms contenting themselves with moderate gains when demand is high in order to justify maintaining profits when demand is low. It means that the medieval doctrine of the Just Price has been revived, not to be applied, where it would make very good sense, to the incomes of primary producers, nor yet to relative wage rates, but rather to relative profits, undermining the traditional justification for profit that it is the reward for taking risks.

#### AGRICULTURAL PRICES IN A SOCIALIST ECONOMY

There is a great deal of discussion going on nowadays among the economists of the socialist countries about the possibility or desirability of using the price mechanism, as an aid to planning, in such a way as to take some of the weight off direct administration.

To offer any proposals for helping to solve their problems would require a discussion wider, deeper and more concrete than can be undertaken here. The following remarks are intended rather to use their problems to illustrate our argument.

In each of the socialist economies flourishing to-day there is a large sector which broadly corresponds to our first model. Agriculture is conducted by peasants who have been given a right to the land they cultivate or in collective farms which corporately own the land. The incomes of farmers (given technical conditions) depend upon the selling prices of their produce. The characteristic problem in the socialist economies is not (as so often happens in the rest of the world) that the ex-farm demand price for foodstuffs, if left to the free play of the market, would be too low to give the farmers a decent livelihood, but the reverse. It is much easier to expand outlay on industry than it is to increase the production of food. In rapidly developing economies demand shoots ahead of supply, and peasants who can sell at market prices hold the



industrial sector to ransom. Some means have to be found to keep procurement prices paid to farmers below demand prices in the consumer's market. The various methods which are in use—obligatory deliveries of part of the crop, compulsory purchases, etc.—are clumsy in their operation and are liable to make the farmers sulky, as well as creating a great temptation to black marketeering. This difficulty arises because, like the producers in the model of an exchange economy, the farmers own their own means of production, and the simplest way out of it is to break the connection by charging them a money rent for their land. They could then be freed to sell their produce at market prices.

The relative level of rents can be assessed according to the money-yielding power of various areas of land, and the over-all level can be set so as to produce whatever is conceived to be a fair and right relationship of farmers' incomes to those of the rest of the community.

This simple solution, however, is too far from present practice to be feasible, and until the supply of agricultural produce overtakes demand various uneasy means will have to be used to keep the farmers' incomes within bounds. When supply does overtake demand, the boot will be on the other leg, and various uneasy means will have to be found (as they are to-day in the U.S.A.) to keep the farmers' incomes from falling too low.

There is no obvious criterion for what is the right level of incomes to allow to the farmers, and in some cases, notably in the U.S.S.R., the means taken to prevent the agricultural sector from exploiting the rest of the community have gone to the other extreme and (as it is now admitted) have been intolerably hard on the farmers.

There cannot be any simple criterion to decide what is the "right" distribution of income between the sectors. The ultimate ideal may be "equal pay for equal work," but the whole life of an industrial worker is different from that of an agricultural worker, and what constitutes equal pay, taking account of the purchasing power of money over the different kinds of goods and services that each wants to buy and what constitutes equal work, taking account of the different kinds

of jobs that each has to do, can never be obvious and will always leave room for dispute. In any case, the ultimate ideal of justice has to give way meanwhile to expediency, and the distribution of rewards has to be made in the manner most helpful to development. In short, the distribution of income between the two sectors cannot but be a political decision, whether it is made consciously or whether it emerges as the result of expedients adopted from time to time to meet problems as they arise.

#### COMMODITY PRICES

In socialist industry there are, strictly speaking, no wages. The means of production are owned in common and every individual income is a share in the proceeds of the activities of the whole economy. But so long as the share is mainly governed by work done the system operates in very much the same way as a wage economy. It is convenient to describe it in the terminology of our second model, calling the earnings of workers *wages*, and the excess of the receipts over costs in the operation of socialist enterprises *profits*.

The over-all volume of profits, and so the relation of prices to wages, is determined by the requirements of the government for outlay on non-saleable output ; it is therefore determined when the broad allocation of resources between sectors of the economy has been made under the plan.

We are here concerned with the pattern of prices of goods sold to the public, or, what comes to the same thing, the proportions in which government receipts are procured from the sale of different commodities.

We may suppose that, apart from special cases where rationing is deliberately preferred, final prices to consumers are intended to be set in such a way as to equate demand to available supplies, that is, in such a way that there are no persistent shortages or persistent silting up of stocks in any market.

To accept the rule that prices should equate demand to the available supply of each commodity does not settle the question of what the pattern of prices should be. The demand for each commodity of a typical family depends very largely upon how

much of the family income has been absorbed by buying other commodities, so that each price depends upon all the rest and there is a great deal of play in the pattern of prices that will establish equality between supply and demand in each market.

As between substitutes, say, nylon and cotton shirts, it is true that the relative prices that regulate demand are determined by the tastes of the public. When nylon is much less plentiful than cotton, if the public is more or less indifferent between them, nylon must be sold only a little dearer than cotton ; whereas, if people are very keen on nylon, the price difference will have to be large to get them to take cotton shirts.

But as between broad groups of commodities substitution in response to price differences has much less effect. If clothes as a whole are sold cheaper, people may spend more money on, say, furniture. The same total government revenue could be raised from cheaper clothes and dearer furniture, or dearer clothes and cheaper furniture, with supply and demand in balance equally in either case. There is thus an arbitrary element in the price system at any moment. A range of patterns of prices can all give an equally good fit with a given pattern of supplies. The pattern which happens to be ruling in any given situation must be largely a matter of historical accident.

The relative prices of different commodities affect the real income of consumers with different tastes, needs and habits. If the pattern of prices happens to be such as to make furniture expensive the newly married couples find the purchasing power of money correspondingly low. For our present purpose this is not important. We are not looking for some ideal of "maximum satisfaction" but merely for a system of prices which will operate itself, without any need for rationing or any temptation to black marketeering.

Given that a system of final prices has been established, how are the ex-factory prices for the productive enterprises to be set ? Clearly prices should not be fixed by the enterprises themselves, for if they were free to set their own prices it would be necessary to employ administrative checks to prevent them behaving like capitalist monopolists. Prices must be set by the planners and given as data to the enterprises.

Nor should prices be fixed (though in general this is how they are fixed) on the basis of costs of production, for then it is to the interest of the enterprises to get the maximum costs allowed as legitimate, instead of it being to their interest to keep actual costs to a minimum. And they have to be instructed in great detail as to what to produce instead of having a simple motive to select the assortment of commodities within their range that yields the highest selling value per unit of costs.

At first sight it might seem that the solution is to fix prices, fix money wage rates and just instruct the enterprises to maximise their profits (giving them whatever incentive in the form of percentage bonuses or honourable mentions is adequate to make them eager to do so). This would operate correctly in giving the enterprises an interest in efficient production, and in the selection of the best assortment of commodities to produce, but it is incomplete in a serious respect.

If this plan is followed labour would have to be allocated between the enterprises, for each enterprise would find it profitable to employ more labour than it could have. Saleable output earns a profit which is contributed to the revenue of the State. The expenditure of the State returns to it as profit, for incomes earned in respect to non-saleable activities (defence, investment, social services) are spent on saleable output (or, in so far as there is private saving, the savings are borrowed by the State). Since the proportion of non-saleable to saleable activities is characteristically very high in these economies (and private saving very small), the value of output per man employed in the production of saleable commodities is likely to be appreciably greater than his wage, even when he is working with the least efficient plant. In short, there is a marginal profit to be made on employing labour, and if the enterprises were all loyally attempting to maximise profits their demand for labour would exceed the available supply.

To bring the demand for labour into equilibrium it would be necessary to charge the enterprises for their labour more than the workers receive. This can be done by levying a proportional tax on the wages bill. Alternatively, the profit going to the enterprise can be reduced by an *ad valorem* tax on all commodities. The amount of the tax should be such as to



absorb the profit of enterprises which are "at the margin" in Marshall's sense, that is, those for whom the value of output per man is least (including, of course, in the calculation men employed in producing materials, power, etc. used by them). Enterprises which are in a more favourable position, because they have more efficient plant or who are producing commodities whose scarcity gives them a high demand price, will be making profits over and above the tax. To maximise these profits they must adjust their operations (in so far as there is some play in technical conditions) in such a way as to make marginal costs equal to ex-factory prices. The profits must be handed over as a contribution to government revenue, leaving the enterprise with only an incentive bonus.

This scheme reproduces the operation of the ideal competitive model for the wage economy when it is out of equilibrium. Each enterprise has an interest in producing a given output at minimum cost, in making the selection of commodities (within its technical capacity) which yields the highest profit and in applying labour to given plant in such a way as to bring the value to the enterprise of the marginal product of labour into line with the cost to the enterprise of employing labour.

As in the ideal competitive model, there is no attempt to build up prices on the basis of costs plus profit. Prices are derived from demand, and it is scarcity relatively to demand, not high costs, that makes prices high.

There is no place in this scheme for anything like a rate of interest on the value of capital equipment employed in production and no need to go into the ever-perplexing question of valuing the capital in existence in order to know how much interest to charge in any particular case. Nevertheless, one important reason for the scarcity of some commodities, which keeps their prices high, is the scarcity of plant to produce them, and if past investment has been made in a reasonable way, plant will tend to be scarce where the cost of investment per unit of output is high. Thus indirectly profits will in the main correspond to capital employed.

The proper place for the rate of interest is in the planning of investment. This is a large question outside the scope of the

present discussion. All that we can say here is that the profits obtainable from any particular commodity may serve as a useful guide to the planners in deciding priorities for expansion, and in so far as they follow this guidance they are acting upon the principle of the competitive model and tending to bring about an equalisation of the expected rate of profit on investment in all lines of production of saleable commodities.

#### PRICES OF MATERIALS

In some respects the most important element in pricing policy for a planned economy is to find the correct prices for materials (including power). They concern only transactions between enterprises and so in one sense are mere book-keeping, affecting no one's real income (except in so far as they are sold to farms), but they are very important because it is in their use that the "principle of substitution" has most scope to operate. Materials, over all, are scarce relatively to demand and most have a wide variety of uses, while most uses (though not all) can be met less or more efficiently by a variety of materials. It must therefore be the object of policy to see to it that each material is put to the uses where it is most important, that is, the uses in which the next-best substitute for it is least eligible.

The allocation of materials is just the kind of job that the pricing system can do. The manager of an enterprise, in trying to keep his costs as low as possible, will prefer the material, for any job, which is the best bargain, that is, which is cheapest in relation to performance in that particular job. If the prices of materials reflect their relative scarcity, while the prices of final products are fixed, they will automatically be allocated in the most efficient way.

The demand for materials comes partly from high-priority uses, such as defence; partly from investment schemes and partly for export, which are both controlled by the over-all plan; partly from the consumer good sector and sale to farms, which are both controlled by market demand. It is therefore not a simple matter to organise a simulacrum of a market where each element of demand is given its proper weight in money terms, so that the bids of buyers lead to the establishment of prices that correctly reflect the relative scarcities of different

materials. It is probably impossible to escape altogether from the need for direct allocation, at least between the broad categories of uses. But within the consumer-good sector the pricing system could be made to work. The over-all allocation of a material to the consumer sector having been fixed, the authority in charge of it could find out what quantities each enterprise would wish to take at each price, and so arrive at the demand price for the available quantity. These demand prices are derived from the ex-factory prices of commodities which, in turn, are derived from demand in the consumer's market. The ex-factory price has been reduced by the turn-over tax, so that it would not be correct to tax the materials separately, but any profits made on the production of materials must be handed over to the government.

This scheme would be somewhat complicated to apply, but any scheme which makes a rational use of prices takes the weight off direct administration, and the scheme need not be perfect to be a great improvement on allocation as a method of dealing with the distribution of scarce means amongst a variety of uses.

#### CONCLUSION

Ever since Adam Smith economists have been looking for a simple general theory of prices to fit all cases. The foregoing argument is intended to show that this is a will o' the wisp. Prices are a social phenomenon and the pricing system in any economy is geared to its social and political system.

The "free," "pure" market price system of the economic text-books is only one amongst many possible systems. In fact it is never found in a free and pure form where groups of producers can organise themselves, whether politically, or in guilds or monopolies, to manipulate prices in their own interests. Almost the only example of the free price system operating freely is the case of unorganised producers of primary commodities, and this is precisely the case in which it is least likely to produce beneficial results.

JOAN ROBINSON

# The Depreciation Multiplier and a Generalized Theory of Fixed Capital Costs<sup>1</sup>

## *Introduction*

1. When dealing with problems of economic growth or with practical planning we need a measure of capital growth. We are accustomed to use the concept of "net investment" as such a measure.

Net investment is defined as gross investment net of depreciation ("capital consumption"). The difficulties of measuring depreciation are well known: changes in prices, estimation of life period of capital assets, changes in technology. But, providing that these difficulties have been overcome, net investment is believed to be a useful analytical concept. In particular growing, stationary and declining economies may be described respectively by positive, zero and negative net investment.

However, if we are interested in changes in the current<sup>2</sup> productive capacity of an economy, which is what really matters in an analysis of economic growth, net investment may become a dangerously misleading concept, and a more appropriate measure

<sup>1</sup>I am indebted to J. Johnston, W. Peters and to Professor Johnson who have read earlier drafts of this paper and have made many valuable comments. The problem discussed here I tackled for the first time, rather unsatisfactorily however, as an undergraduate in a paper which won a prize and was read at the University in Zagreb in January 1950 ("Marxian Schemata and the Socialist Enlarged Reproduction", pp. 28-29). The present paper is a part of a larger research work in economics of the planned economy, which has been made possible by a generous grant of the University in Manchester. Due to the limitations of space the original paper has been somewhat condensed. Mathematics has been kept to the minimum and for the mathematical derivations in the case of the growing economy the reader is advised to look at the excellent paper of Prof. Domar on the same subject ("Depreciation, Replacement and Growth", E.J. 1953, reprinted in: *Essays in the Theory of Economic Growth*, New York 1957).

<sup>2</sup>In the original paper the terms "productive capacity", "fixed capital cost", "capital consumption" and "cost quantity" were used, implying by these terms observed and statistically measurable economic phenomena at any point or period of time. In this paper Professor Johnson, in his capacity as editor, suggested that the word "current" be added in each instance so as to avoid the possible confusion on the part of English readers.



of change in capital stock seems necessary. The current productive capacity of an economy, defined as the potential output of goods and services in a specified period of time, may rise, decline or remain the same regardless even of the direction of changes in net investment<sup>1</sup>.

2. The fact just mentioned is due to the shortcomings of depreciation when used as a macroeconomic concept. The annual gross social product of an economy consists of three economically distinct parts: the first part is used for consumption; the second part serves for the replacement of the output capacity of scrapped fixed assets to make good what I shall call *actual* or *current* capital consumption, i.e. it is used for keeping the *gross* capital stock of the economy intact; and, if anything is still left over, there is a third part to be used for new investment which increases the output capacity of the economy. Our attention will be centred in the analysis of the second part of the social product which is usually supposed to be identical with depreciation. However, depreciation measures imaginary and not actual, observed, capital consumption, if the latter is defined as the reduction of the quantity of capital representing the current output capacity of fixed assets. Depreciation may be greater or smaller, and is only by chance equal to the actual diminution of capital assets. In a growing economy depreciation will always be greater than capital consumption providing in this way also part of the funds for capital accumulation<sup>2</sup>.

Depreciation conceptually means setting aside part of the proceeds realized by means of the productive capital asset—this part corresponding to the process of imaginary de-preciation of the asset—in such a way that the cost of the fixed asset is evenly spread over the output it helped to produce and that by the end of the service life of the asset the amounts set aside are exactly equal to the replacement value of the asset, which now may be scrapped and replaced by an analogous new one. From the point of view of an isolated firm it is neither better nor worse off after this operation has been performed; there has been no net investment. But

<sup>1</sup>A very successful graphic illustration of this fact has been produced in the paper of P. Redfern on "Net investment in Fixed Assets in the United Kingdom 1938-1953" (J.R.S.S., 1955, p. 145).

<sup>2</sup>In a declining economy depreciation will be less than the capital consumption, the difference being capital decumulation.

in an interconnected growing economy the process of depreciation is immediately followed by the process of accumulation, the depreciation funds are not left lying idle but are being invested. Thus the economy as a whole is in the end better off.

3. As a measure of the change in capital stock as defined above I propose to introduce the concept of "new investment" which is defined as the addition to the gross capital stock which, in turn, measures the current productive capacity of the economy. Alternatively new investment may be derived from gross investment by subtracting replacement investment (investment necessary to replace the productive capacity of the fixed asset scrapped).

However, so defined new investment does not precisely measure the increase in the current productive capacity of an economy because it takes time before new investment may be used for new production. We have to distinguish between the "quantity of capital in existence" and the productive capacity proper namely the "quantity of capital in function" (capacity utilization being constant). As the national product statistics are usually computed annually and the investment gestation period is longer<sup>1</sup>, there will be some lag effects. Still, this does not represent any conceptual difficulty, but is a technical matter.

4. To measure the accumulative effect of the invested depreciation quotas I propose to use a transformation coefficient which might be labelled "depreciation multiplier" because of the multiplying effect of the depreciation funds on capital formation.

The depreciation multiplier is the number by which the original new investment has to be multiplied to obtain the final value of the addition to the gross capital stock. The initial amount of new investment is equal to the net investment in the same period, and in a stationary economy it is also equal to the sum of net investments. In a stationary situation an initial disturbance will cause a converging oscillatory process. After

<sup>1</sup>The average lag between new investment and the resulting increment in national product is, e.g. in Yugoslavia, slightly less than four years in industry (manufacturing and mining) and about four years in the economy as a whole in the average. (From my unpublished study for the Yugoslav Federal Planning Bureau).

this process comes to an end at the time  $t$  the multiplier will assume the fixed value :

$$(1) \quad k = \frac{\sum_1^t I}{I_1}, I_1 = N_1 = \sum_1^t N, r = 0$$

where  $I$  stands for new investment,  $N$  for net investment and  $r$  for the rate of growth of investment in periods before the initial disturbance and after the adjusting process has ended.

The growing (declining) economy may be conceived as an economy where a new initial change occurs every year. Therefore, more generally, the multiplier may be expressed as

$$(1.1) \quad k = \frac{\sum_1^t I}{\sum_1^t N}, r \neq 0$$

where  $r$  may take any value in any period.

But the sum of new investment is equal to the gross capital stock created in the respective period, and the sum of net investment is equal to the net capital stock created in the same period. Under the special assumption of a constant rate of growth the multiplier represents the ratio of gross capital stock to net capital stock :

$$(1.2) \quad k = \frac{K_t}{K_t^N}, r = \text{const.}$$

where  $K$  stands for gross and  $K^N$  for net capital stock and  $t$  is greater than the length of the depreciation period. As the depreciation does not affect inventory changes the term "capital stock" will mean the stock of fixed capital only.

5. In order to find out the net depreciation effect all price and technological changes are assumed to be absent. In calculating depreciation the straight-line method is used, i.e. capital assets are assumed to depreciate by a constant amount each year. Thus productive capacity and maintenance costs of fixed assets are assumed to be approximately the same throughout their service life which is perfectly foreseen and fixed. The year in annual analysis and investment gestation period in period analysis are assumed to be exact multiples of production periods and frictions

are neglected (all this in order to avoid complications in depreciation and profit generation). However, in the course of the discussion all restrictive assumptions will be abandoned.

For the sake of simplicity and also because this is a normal case—at least in a planned economy—the *growing* economy will be examined. But it is always possible to define a strict parallelism between the growing and the declining economy and one could speak simply of a “changing economy” as opposed to a stationary one. The proof for this is supplied in paragraph 22.

The meaning of symbols used in this paper is as follows :

$K$  = gross stock of capital ( $K = \Sigma I$ )

$K^N$  = net stock of capital ( $K^N = K - \Sigma D = \Sigma N$ )

$G$  = gross investment

$N$  = net investment

$I$  = new investment

$D$  = depreciation

$R$  = replacement

$a$  = share of accumulative part of depreciation in depreciation ( $a = 1 - \alpha$ )

$k$  = depreciation multiplier

$n$  = depreciation period

$r$  = rate of growth

$t$  = time

definitional equations :

$$\alpha = \frac{R_t}{D_t}, \beta = \frac{G_t}{K_{t-1}}, \gamma = \frac{N_t}{K_{t-1}}, \delta = \frac{D_t}{G_t}, \frac{1}{\nu} = \frac{R_t}{K_{t-1}}$$

We shall study first the case of a stationary economy where a once-over change has occurred. Next the growing economy will be considered.

*Stationary economy with a single positive change in investment.*

6. Suppose the depreciation period is  $n = 4$  years and a single amount of capital  $I_1 = N_1 = 1000$  has been created. Suppose next that in successive periods gross investment equals depreciation,  $G = D$ , thus rendering net investment  $N_m = 0$ ,  $m = 2, 3, 4, \dots$ . The result of these assumptions is shown in table 1.



**TABLE 1**  
CHANGES IN GROSS CAPITAL STOCK ( $n = 4$ )

Year	Gross Investment	Depreciation	Net Investment	Replacement	New Investment	Gross Capital Stock (End of the year)
1	1000	—	1000	—	+1000	1000
2	250	250	—	—	+ 250	1250
3	312	312	—	—	+ 312	1562
4	390	390	—	—	+ 390	1952
5	488	488	—	1000	— 512	1440
6	360	360	—	250	+ 110	1550
7	388	388	—	312	+ 76	1626
8	406	406	—	390	+ 16	1642
9	411	411	—	488	— 77	1565
10	391	391	—	360	+ 31	1596
11	399	399	—	388	+ 11	1607
12	402	402	—	406	— 4	1603
20	400	400	—	400	—	1600

The change in investment has caused an oscillatory converging movement in gross capital stock. The continuous reinvestment of depreciation funds has had a multiplying effect on the initial amount of capital invested in fixed assets. In this case, with the depreciation period  $n = 4$ , the multiplier is 1.6. For  $n = 7$ ,  $k = 1.75$ ; for  $n = 10$ ,  $k = 1.82$  etc.,  $k$  increasing as the depreciation period increases.

7. The changes of capital stock in our model may be described by means of a difference equation :

$$(2) \quad K_t = \left(\frac{1}{n} + 1\right)K_{t-1} - \frac{1}{n}K_{t-n-1}$$

As the equation is of order higher than the second ( $n > 1$ ) there is no possibility of writing down a formal solution from which one could deduce the behaviour of the system. But a little experimentation with figures will show that, at least within the range of meaningful assumptions, variations in  $n$  will produce similar patterns as that described by the figures of table 1.

Within certain limits it is also possible to find the value of  $K_t$ . In the first  $n$  years  $K$  is growing exponentially with the rate of

growth  $r = \frac{1}{n}$ . In the year  $n + 1$  original capital has to be replaced, therefore

$$(2.1) \quad K_{n+1} = K_1 \left(1 + \frac{1}{n}\right)^n - K_1 = K_1 \left[\left(1 + \frac{1}{n}\right)^n - 1\right]$$

For the next  $n$  years the following formula applies

$$(2.2) \quad K_t = \left(1 + \frac{1}{n}\right)^{t-n-2} K_1 \left\{ \left(1 + \frac{1}{n}\right) \left[\left(1 + \frac{1}{n}\right)^n - 1\right] - \frac{1}{n} (t - n - 1) \right\}, t = n+2, n+3, \dots, 2n+1;$$

After the year  $2n+1$  the expression becomes very complicated. But again some experimentation with various feasible depreciation periods shows that the final value of gross capital stock may be approximated by the following formula

$$(2.3) \quad K_{final} \doteq K_{n+1} + 0.3 (K_n - K_{n+1})$$

$$K_{final} \doteq K_1 \left\{ \left[\left(1 + \frac{1}{n}\right)^n - 1\right] + 0.3 \left[1 - \frac{1}{n} \left(1 + \frac{1}{n}\right)^{n-1}\right] \right\}$$

Applying the definitional formula (1) we get the value of the comparative static multiplier

$$(3) \quad k \doteq \left[\left(1 + \frac{1}{n}\right)^n - 1\right] + 0.3 \left[1 - \frac{1}{n} \left(1 + \frac{1}{n}\right)^{n-1}\right]$$

As  $n$  grows the  $k$  series will converge, i.e. for longer depreciation periods the multiplier will be greater but less than proportionally greater. If the approximating expression holds for all values of  $n$  greater than 1—for which an indirect proof will be supplied later, (7.2) and (7.3)—the limiting value of the multiplier will be, exact to the first decimal,

$$(3.1) \quad \lim_{n \rightarrow \infty} k = 2.0$$

8. The foregoing example is based on the assumption that capital produced this year will come into productive use next year and thus the depreciation process will start next year too. In practice the average lag will be longer than one year, and the depreciation allowance has meaning only on the basis of "capital in function" and not simply on the basis of the total capital stock in existence. A fairly close approximation to reality may be obtained in the following way.

Suppose that the investment gestation period lasts  $m$  years and that the last portion of investment in the  $m$ 'th year brings the total invested capital in this period into productive use at the end of the period. The productive capacity of the economy during this gestation period is determined by the amount of capital at the end of the preceding period, which also determines the depreciation. And gross investment in the period will amount to  $m$  annual depreciation allowances on the basis of capital in function (= capital in existence) at the end of the preceding period. We thus have, obviously, the case represented by table 1. If the gestation period is, say, 4 years (see footnote at p. 3), the depreciation period of the table 1 model is actually 16 years.

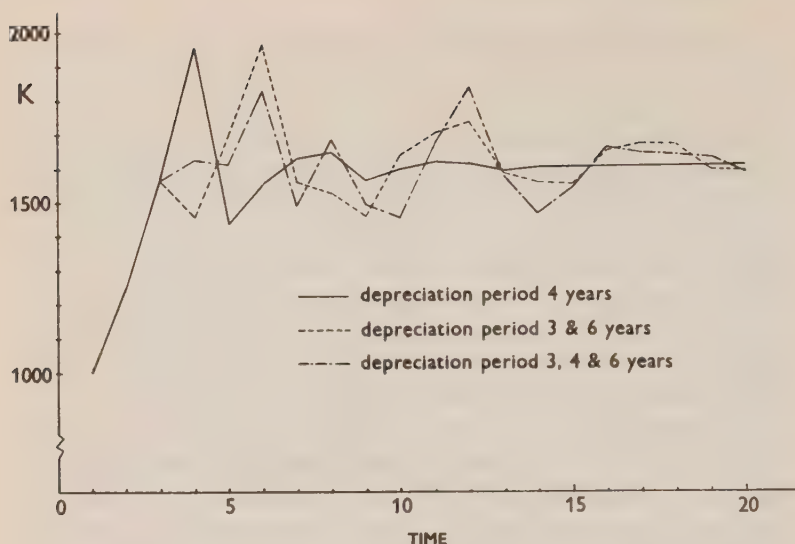
9. The next approximation to reality is to assume that there are two kinds of fixed assets, say equipment and structures, with different depreciation periods. Take, for instance, the depreciation period for equipment  $n_e=3$ , and for structures  $n_s=6$ , which leads to an average depreciation period of  $n=4$  if we assume that the composition of capital is  $1/2$  and  $1/2$  for equipment and structures. The average depreciation period is the same as in table 1. Thus, by comparison, we shall be able to establish the influence attributable to the additional assumption of various kinds of capital goods.

The model 2 may be described algebraically in the following way

$$(4) \quad K_t = \left(1 + \frac{1}{n}\right) K_{t-1} - G_{t-3}^e - G_{t-6}^s$$

This expression is hopelessly complicated for mathematical treatment. But we can get some idea about the behaviour of such systems by graphical comparison.

Inspection of the graph shows that the introduction of the second kind of capital good has introduced a second peak in the early part of the time path. But the more violent oscillations are a matter of chance because the replacement waves reinforce each other ( $n_s = 2n_e$ ). Therefore a third model has been introduced for comparison. It is based on the assumption that the capital is composed of three kinds of fixed assets in the ratio  $\frac{1}{3} : \frac{1}{3} : \frac{1}{3}$  and with respective depreciation periods  $n_1=3$ ,  $n_2=4$ ,  $n_3=6$ . Thus there is again the same average depreciation period  $n=4$ .



The graphical comparison seems to suggest the conclusion that, with the introduction of more capital goods with various life periods, peaks in the initial stages become more numerous and less pronounced, but the oscillations later on are greater. The final value of the capital stock will be about the same.<sup>1</sup>

#### *Growing economy*

10. New investment will not only generate depreciation funds, but will produce profits as well; and the use of these profits to finance the successive new investment will help to accelerate the growth of capital.

If we introduce into model 1 the assumption that there is a fixed rate of profit (applied to the gross capital stock at the end of the preceding period) and that this profit is used to finance net investment, we shall have a continuously growing economy. The steady influx of net investment will tend to smooth out the oscillations. The system will tend to achieve a steady rate of growth and a steady ratio of replacement to depreciation. But instead of a sudden big change we shall assume continuous growth. This is more realistic—at least in a planned economy—and also simplifies considerably the mathematics of the argument.

<sup>1</sup>In the case of a regularly growing economy this may be easily proved. See E. D. Domar, *ibid.*, Mathematical Appendix.



11. Suppose gross investment is continuously growing, since the first investment has been made, at the steady rate  $r$ . Then the gross capital stock (= sum of all new investments) will by the time  $t$  increase to

$$(5) \quad K_t = G_1 (1 + r)^{t-n} \frac{(1 + r)^n - 1}{r}$$

The next step is to ask : what part of depreciation has been used to finance this process ?

After the first  $n$  years, i.e. after the replacement of originally invested capital has taken place<sup>1</sup>, the ratio of replacement to depreciation takes a fixed value expressed by formula

$$(6.0) \quad \alpha = \frac{R_t}{D_t} = \frac{n r}{(1 + r)^n - 1}, t = n+1, n+2, \dots;$$

12. According to the original assumption gross investment is growing at the fixed rate  $r$ . The gross capital stock is growing at the same rate, as is seen from the expression (5). Hence, the depreciation is growing at the same rate. Being equal to gross investment  $n$  years earlier, replacement is growing at the same rate. Finally, net investment is growing at the same rate, for it represents the difference between gross investment and depreciation. In this way all the ratios between various elements will have definite values.

Some useful ratios worth computing are :

ratio of gross investment to gross capital stock at the end of the preceding year

$$(6.1) \quad \beta = \frac{r (1 + r)^n}{(1 + r)^n - 1}$$

ratio of net investment to gross capital stock at the end of the preceding year

$$(6.2) \quad \gamma = \frac{r (1 + r)^n}{(1 + r)^n - 1} - \frac{1}{n}$$

ratio between depreciation and gross investment

$$(6.3) \quad \delta = \frac{(1 + r)^n - 1}{n r (1 + r)^n}$$

<sup>1</sup>If  $n$  means an average depreciation period the formula holds strictly only when  $t$  is greater than  $n$  of the fixed asset with the longest service life. See Domar, *ibid.*, Mathematical Appendix.

and ratio between replacement and gross capital stock at the end of the preceding year

$$(6.4) \quad \frac{1}{v} = \frac{r}{(1+r)^n - 1}$$

One ratio may be transformed into another by means of simple transformation formulae

$$(6.5) \quad \alpha (1+r)^n = n\beta$$

$$(6.6) \quad n(\beta - \gamma) = 1$$

$$(6.7) \quad n \rho \delta = 1$$

$$(6.8) \quad \alpha v = n$$

13. If we had assumed that net investment, and not gross investment, was increasing at a constant rate since the beginning, the same results could hold only as a tendency, only at the limit. In this case rates of growth of various elements tend to approach the rate of growth of net investment from above in the following order: gross investment, gross capital stock, depreciation. In the beginning the absolute value of depreciation is less than that of net investment. But as the rate of growth of depreciation is higher, depreciation will surpass net investment sometime later on.

Being in essence of the same nature as the first assumption, but much more difficult to manipulate mathematically, the assumption of steady growth of net investment will not interest us any more.

#### *Some empirical evidence*

14. A rigorous empirical test of the theory expounded above would require a uniformly growing empirical series over a long time. Then, also, knowledge of the depreciation period and of replacement expenditures would be necessary. Such a collection of data has not been published in any country so far. Therefore a much more rough empirical test will be produced here. Data are taken from internal publications of the Yugoslav Federal Planning Bureau.

The available statistical evidence shows that in the last few years about one half of annual depreciation funds of Yugoslav industry (manufacturing and mining) has been used to finance new investment. Our formula has to be tested against this empirical observation.

According to the census of national productive capital, undertaken by the Planning Bureau in 1953, the share of equipment in industrial fixed assets was 54%. Taking this as well as some other supplementary data into account, the average depreciation period may be roughly estimated as being 30 years ( $n=30$ ). The rate of growth of industrial gross investment in the period 1948-1955 was  $r = 4.8\%$  per annum. Inserting these data into the formula (6.0) we get  $\alpha = 0.47$ . Therefore the accumulative part of depreciation,  $a = 1 - \alpha$ , will amount roughly to one half of the total amount of depreciation, which corresponds to the statistical observation quoted.

In the same period the growth of all other sectors of economy was lagging far behind the growth of the industry (nearly  $\frac{2}{3}$  of all investment was diverted to industry), thus their depreciation could contribute only to a small extent to the fund of accumulation. The share of industrial depreciation in total depreciation was slightly less than one half. Therefore one would expect that the accumulative part of total depreciation will be greater than one quarter but probably not more than one third. This indirect estimation rather than the existing statistics is used because the latter are not sufficiently reliable.—In the period under consideration the total gross investment was growing at the rate of  $2.1\%$  per annum. Taking the depreciation period  $n = 36$  years (share of equipment 47%) and using the formula (6.0), we get the theoretical result  $a = 0.34$ , i.e. slightly more than we have expected.

*The meaning of the concept "depreciation multiplier"*

15. Like all other ratios in the growth model the multiplier will have a constant value. Defined as a ratio between the sum of new investment and the sum of net investment in a certain period, or, what is the same, as the ratio between the addition to the gross stock of capital and the addition to the net stock of capital within this period, and providing that the rate of growth has not changed, the depreciation multiplier may be expressed in the following way

$$(7) \quad k = n \cdot r \frac{(1 + r)^n - 1}{(1 + r)^n (nr - 1) + 1}$$

Recalling the expression (6.2) this may also be written in the following way

$$(7.1) \quad k = \frac{r}{\gamma}$$

which means that the multiplier measures also the ratio between new and net investment and not only between gross and net capital stock. But this is only a special consequence of our assumption of steady growth, the result of which was equal rate of growth of all the four quantities.

16. The last result throws light also on the behaviour of capital stock in model 1. The oscillatory process came to an end when the previous relation between gross and net stock of capital was reached again, namely that relation, which was required for stationary conditions. With depreciation period  $n=4$ , this relation was 1.6 : 1.

We may now supply the proofs promised for expressions (3) and (3.1) and generalize expression (7).

Suppose the rate of growth is diminishing towards zero. At the limit, when  $r=0$ , a stationary situation will arise and our multiplier will be transformed into the multiplier of table 1. Therefore the expression

$$(7.2) \quad \lim_{r \rightarrow 0} k = \frac{2 n^2}{n + n^2}$$

is a simple formula for the static multiplier which we can use in place of the earlier clumsy difference equation (2).

If we now ask what is the maximum value of the static multiplier, the answer is

$$(7.3) \quad \begin{array}{l} \lim k = 2 \\ n \rightarrow \infty \\ \text{after} \\ r \rightarrow 0 \end{array}$$

which provides the indirect proof for our empirical coefficient 0.3 in formula (3).

This demonstration of the usefulness of looking at stationariness as a special case of growth is the happy byproduct of the analysis. The more general character of the dynamic approach will again be demonstrated a little later (6.4.3).



*Relativity properties of current (dynamic) fixed capital costs*

17. The "depreciation multiplier" as an analytical tool is linked up with the concept of "net investment".

"Net investment" measures the addition to the existing capital with respect to the quantity of capital and its age structure at the same time. The same applies to the net capital stock. A greater quantity of older capital and a smaller quantity of younger capital may be expressed by the same amount of net capital; the age is transformed into the quantity and vice versa as if they were homogeneous and additive. The consequences are doubly unfortunate: we can neither infer anything directly about the age structure, for its changes are mixed up with quantity changes, nor, for the same reason, do we know anything about the real size of the productive capital. Measuring both at the same time we no longer have the measure for either of them.

18. It seems, therefore, that the "one dimensional" concept of "new investment" will do the job much more successfully when used in model building or in practical planning. Considering capital as a factor of production—and this is clearly the essence of this concept—what matters is the change in its quantity. If this is so, current capital consumption is equal to replacement and not to depreciation. Replacement expenditures are the actual capital costs for the community. And, finally, if replacement, analogously to depreciation, is to be measured by its relation to gross capital stock, a series of interesting phenomena may be demonstrated as a conclusion of this discussion.

Recalling expression (6.4), and taking its three limiting values we get

$$(6.4.1) \quad \lim_{r \rightarrow \infty} \frac{1}{v} = \lim_{r \rightarrow \infty} \frac{r}{(1+r)^n - 1} = 0$$

$$(6.4.2) \quad \lim_{n \rightarrow \infty} \frac{1}{v} = 0$$

$$(6.4.3) \quad \lim_{r \rightarrow 0} \frac{1}{v} = \frac{1}{n}$$

The capital costs of an economy, expressed as a ratio of replacement to existing capital, tend to fall with a rising rate of growth and with increasing length of life of fixed assets, and will be increasing when the rate of growth is slowing down and the life

period of capital becoming shorter. This brings a relativity element into the determination of capital cost and, with it, greater generality.

19. The limit of the last case (6.4.3) is revealing; in the stationary economy replacement costs are equal to depreciation costs. It follows that the *concept of "depreciation" and the resulting concepts of "net investment" and "net national product" describe in fact a very special case. A generalised theory of growth will build on the concepts of "replacement" and use the resulting concepts of "new investment" and "new national product".*

Our final results may be interpreted also in the following way.

If  $\frac{1}{n}$  measures static and  $\frac{1}{v}$  measures dynamic current fixed capital costs, their mutual relation will be expressed, recalling

(6.8), as  $\frac{1}{n} : \frac{1}{v} = \frac{v}{n} = \frac{1}{\alpha}$ . In other words, static costs are

related to dynamic costs as the depreciation to the replacement. In the process of growth the  $n$  "static" depreciation years tend to be lengthen into  $v$  "dynamic" years, and the factor of lengthening

is  $\frac{1}{\alpha}$ . As  $\alpha (\alpha = \frac{R_t}{D_t} = \frac{nr}{(1+r)^n - 1})$  varies inversely with the variation of the rate of growth, the time will lengthen or contract depending on whether the change in the speed of the system is positive or negative. When there is no growth,  $\alpha$  assumes unitary value,  $\alpha = 1$ , and the time is contracted to its static limit,  $n = v$  (6.4.3). With a speed of the system tending to infinity, time tends to assume infinite value and, consequently, costs become zero. Finally, unlike in physics, the time may be contracted even below its static limit, because in economics there is also disinvestment. In this case dynamic costs will surpass static costs (i.e. replacement becomes greater and greater in relation to existing capital assets) and at the limit dynamic costs become equal to the existing capital itself.

(6.4.4)

$$\lim_{r \rightarrow -1} \frac{1}{v} = 1$$

It is obvious that from this standpoint the "ageing process" has no definite meaning: *time units, being variable themselves, cannot be used as the units of measurement.*

The actual capital costs are thus determined not only by the quantity of originally invested fixed capital but also by its rate of growth and its life time. The third condition may require an explanation, since the depreciation costs vary also with the length of life of assets. The point is that the offsetting of longer life by depreciation is only valid within the field of statics. The difference is clearly visible when (6·4·3) is compared with (6·4) and  $n$  is allowed to rise ; the replacement costs tend much quicker towards zero because the expression in the denominator of (6·4) is exponential and implies multiplication while there is only an adding process in the denominator of depreciation costs (6·4·3).

20. The generalizing procedure may be completed by letting  $n$  be equal to 1. Then the replacement cost takes the value

$$(6·4·5) \quad \frac{1}{v} = 1, \text{ when } n = 1$$

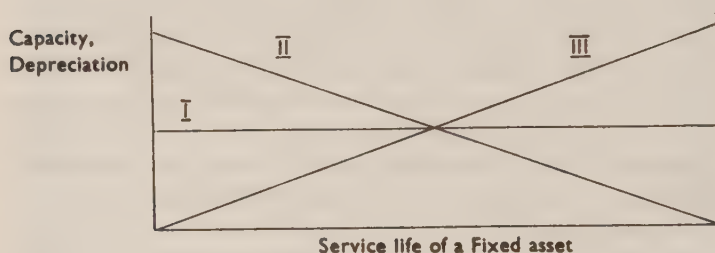
If the life length of the capital is exactly 1, namely if it is equal to the accounting period, then the replacement costs are equal to the total capital costs. Now, to achieve the final generalization, we have to identify the accounting period with the production period. Fixed capital is thus automatically transformed into circulating capital, into raw material which is fully used in the process of production at once. Raw material costs are a special case of fixed capital costs, a case where the "depreciation period" is equal to the production period.

21. The theory expounded above is intended to approximate reality better than that traditional theory which underlies national income accounting and analysis. It has been explained so far by means of the simplest possible model. Now assumptions may be relaxed and complications may be introduced.

Suppose the accounting period is equal to the depreciation period of a particular fixed asset, say twelve months. Then the annual depreciation charge and the total cost of the fixed asset become identical and there is no need for a separate depreciation calculation. Suppose next that more than one unit of the product will be produced, say the production period is one month so that the total output of the fixed asset will consist of twelve equal batches of products. If the accounting period is adjusted accordingly, each batch will bear depreciation charge equal to  $\frac{1}{12}$  of the

value of the fixed asset. If the depreciation were distributed in any other way, some batches would appear artificially more profitable or less profitable than the other ones. The same conclusion is reached if we consider a stationary economy. If depreciation of fixed assets were distributed in time differently from the output of these assets, profits and losses would arise, which is clearly an impossibility in a stationary economy. Thus consistency requires that the cost of the fixed asset be spread evenly over the produce it helped to produce, i.e. that depreciation follow changes in the output capacity (assuming full utilization). Armed with this common sense conclusion let us now tackle our restrictive assumptions.

Take first the assumption of straight-line depreciation which implies that the output capacity of a particular fixed asset is kept constant throughout its service time. Consider the following diagram.



Three possible cases are shown : I output capacity does not change (our model), II output capacity diminishes and III output capacity increases over time. Depreciation, being the cost of the fixed asset, follows its output capacity. Now, due to the unidirectional quality of the time flow the first half of the diagram has a greater "weight" than the second half. In other words, due to the operation of the depreciation multiplier the same amount of fixed investment financed from the depreciation funds created in the first half of the life of fixed asset will have greater total accumulative effect than that in the second half of the asset's life. Thus we reach the conclusion—perhaps paradoxical at the first sight but nevertheless perfectly correct—that if in a growing economy the *aggregate productivity of assets is declining over time*,



*the value of the depreciation multiplier will rise*, and vice versa, as compared with the standard case of constant output capacity. Or, expressed in terms of our relativity coefficient  $\alpha$ , if in a growing economy the aggregate productivity of assets is declining,  $\alpha$  will diminish and the cost quantity will decrease relatively to the standard model; if it is rising, the opposite process will take place; but in either case  $\alpha$  will be less than unity and therefore real cost will be lower than in a stationary economy.

For the same reason the assumption of constant maintenance cost may be abandoned. Maintenance cost, being also the cost of the fixed asset, has simply to be added to depreciation and the respective lines in the diagram have to be adequately redrawn. Various combinations are possible, but essentially no new problem arises.

Finally, obsolescence, defined as a decline of the output capacity of the fixed asset in value terms, represents no difficulty any more. Once again the lines in the diagram will have to be redrawn. Obsolescence, *ceteris paribus* (i.e. in so far as it is independent of the rate of growth), intensifies the effect of the depreciation multiplier.

With this it might be supposed our task was over. For expository and calculation purposes the stationary and growth models developed in this paper are based on a number of restrictive assumptions. But conceptually they represent a perfectly general case.

### *Conclusions*

22. The concept of net investment seems to be of comparatively little analytical value for growth problems. For a number of purposes the "one-dimensional" concept of new investment is needed. New investment is derived from gross investment by subtracting replacement expenditures. New investment measures the addition to the quantity of capital in existence and, with a lag for the gestation period, the addition to the current productive capacity of the economy. The summation of all new investments gives gross capital stock in existence (including inventories which may be treated in the conventional way).

23. The concept of new investment is particularly useful in practical planning and in the analysis of economic growth. The

output being, *ceteris paribus*, related to the current productive capacity of fixed assets, such tools of analysis as capital-output coefficients have definite meaning only if computed on the basis of new investment.

24. It seems that, for analogous reasons, it will be useful to introduce the concept of "new national product", indicating by this the value of gross national product net of replacement expenditures.

25. Depreciation funds will—if the economy is allowed to grow—generate more capital than necessary for the replacement of the originally invested capital. This process has been described in the concept of the "depreciation multiplier". The depreciation multiplier is also a measure of the relation between the gross and the net addition to the capital stock.

26. The dynamic or macroeconomic concept of fixed capital cost implies the relativization of the current cost quantity. Current capital cost (price and technology changes absent) depends not only upon the amount of the original capital outlay, but also on the life span of the capital asset and on the rate of growth of capital. This theory proved to be more general comprising the static theory as a special case: taking the service life of assets as equal, current (dynamic) capital costs become identical with depreciation (static) capital costs when the economy becomes stationary.

27. Moreover, this theory bears striking resemblance to the relativity theory in physics<sup>1</sup>. Coefficient  $\alpha$  corresponds to Lorentz's transformation coefficient  $\beta$ , and to dynamic changes of time and mass in physics correspond dynamic changes of time and cost in economics. Mass and cost are not "given", they depend on the *speed* of the system in motion. Static concepts appear to be inadequate for the analysis of dynamic phenomena. Is this a mere chance, or, is this analogy only an artificial one?

<sup>1</sup>In fact this was the way I first succeeded to explain myself *why* the cost quantity changes—not that replacement is different from depreciation, which, as the historical excursus shows, has been known for the long time. This fascinating analogy—the relativization process as a result of movement in both physics and economics—I attempted to explore in a talk given to the London-Oxford-Cambridge-Manchester Economics Seminar in Oxford in May 1957.

28. This *speed effect* might throw some light on the mechanics of industrial revolutions. An industrial revolution (Rostow's "take-off" period) is a process of transformation of a stationary economy into a growing economy by means of a rapid accumulation of capital. The current cost of the main scarce factor, capital, is a lower proportion of current output the higher the rate of growth of fixed capital. And the effects are extremely impressive<sup>1</sup>. One could perhaps generalize by saying that in this sense the real cost of economic development is, within certain limits, an inverse function of the speed of development.

<sup>1</sup>If, for instance, a stationary economy is transformed into a growing economy with the rate of growth of fixed assets of 2% per annum, fixed capital costs will decrease by 30%, and they will be reduced to only one half of their stationary level if the rate of growth is 3½% ( $n=35$  years and constant output capacity in both cases).

## APPENDIX

*Some remarks on the history of the problem*

1. In a planned economy one would expect an extensive use of the concept of "new investment", both theoretically and practically, because every well made plan reveals a significant difference between net and new investment. But such an expectation is only partly justified. In Yugoslavia, for instance, the Statistical Office collects and publishes net investment data, and the Planning Bureau makes little use of the data so presented, but corrects them for the amount of the accumulative part of depreciation. There has been no attempt so far to discuss these two practices and to induce the Statistical Office to collect the other type of data as well. Neither has there been any theoretical discussion of the problem. Recently, though, an attempt has been made in the Planning Bureau to estimate the series of new investments in real terms since 1952.

The same dualism in practice, without much theoretical treatment, seems to prevail in U.S.S.R. too. It may be worth quoting A. I. Notkin, the author of perhaps the best Russian book on the theory of reproduction.<sup>1</sup> He deals with the subject in a rather elementary manner and says :

" . . . if fixed capital funds are increasing every year the sum of annual depreciation is always greater than the replacement value of capital physically scrapped. . . . This means that a certain part of social work, expressed in the determinate part of the depreciation fund and which, in final instance, will be used to replace fixed capital, is, for the time being, the additional source of accumulation and enlarged reproduction parallel with the surplus product produced in the given year. . . . Systematically and quickly increasing the volume of its fixed capital, it (socialist economy) increases systematically and quickly the absolute difference between the size of the depreciation fund and the value of the reproduction of actually scrapped fixed capital. The accumulation of this difference in money form expresses that fact, that a certain part of social past and living labour, applied in past years to production of machines, structures and other elements of fixed capital now in function, is temporarily being freed from the process of the simple reproduction and is used for enlarged reproduction of fixed capital. . . ." (pp. 104-105).

Notkin clearly insists on the static identity of capital costs, but makes no attempt to explain the resulting "difference in money form". He also makes no attempt to examine the behaviour of this difference under various conditions.

2. Notkin also observes that this "possibility of using the part of the depreciation fund as an additional accumulation fund was not once pointed out by Marx" (p. 105). Marx's views may be seen from the following passages:<sup>2</sup>

"A portion of the constant capital which is calculated to be used up each year, and enters as wear and tear into the value of the product, is in fact *not* used up. . . . Where therefore much constant capital, consequently also much fixed capital, is employed, there exists in that part of the value of the product which provides the depreciation of the fixed capital, an *accumulation fund*, which . . . can be used for the provision of new fixed capital. . . . This accumulation fund is not found at levels of production and in nations where there is no considerable amount of fixed capital. This is an important point. It is a fund for the constant introduction of improvements, extension, and so forth." (pp. 353-355).

<sup>1</sup>A. I. Notkin : *Outline of the Theory of Socialist Reproduction* (Očerki teorii socialističeskogo proizvodstva), OGIZ—GOSPOLITIZDAT, Moscow 1948.

<sup>2</sup>K. Marx : *Theories of Surplus Value*, Lawrence and Wishart, London 1951.



Marx's attention is here completely absorbed by the task of laying down the conditions of realization of surplus value. And the phenomenon just described is to be used for the same purpose, namely "... if the total capital employed in the machine-building industry were even only large enough to replace the annual wear and tear of machinery, it would produce much more machinery than is required each year ... therefore, ... even if in this sphere of production the capital invested in it is only reproduced, continuous accumulation in the other spheres of production is necessary." (p. 355).

With respect to our problem we may notice that Marx does not question the validity of the traditional doctrine of timeless, instantaneous capital costs. As far as I am aware he does not go deeper into the subject at some other place.

3. Our problem will necessarily be encountered by the estimators of national wealth. Thus in the first Yugoslav study<sup>1</sup> in the interwar growth of national wealth Dr. I. Vinski has estimated that new investments in the period 1919-1940 were in Croatia 1.67 times greater than net investments (1.67 is not a proper multiplier in our sense because unproductive capital assets like hospitals, schools etc. are also included). Discussing this difference Dr. Vinski says that "... on the whole ... (it) does not represent new value, viz. the increase of social wealth in Croatia, but means simply maintaining the existing value of fixed capital assets in Croatia" (p. 13). What he had in mind<sup>2</sup> seems to be essentially the same as the argument of P. Redfern, whom I shall quote next at some length.<sup>3</sup>

Before embarking on actual measurement, which is the main purpose of his excellent statistical study, Redfern discusses the implications of various theoretical solutions. His final decision is in favour of the traditional solution. And of the alternative solution, with which we are concerned here, he says the following :

"It might ... be assumed that an asset, if properly maintained, retained its full value until it was ultimately scrapped ; capital consumption would then be represented simply by the assets going out of use and net investment would represent the difference between new assets installed and existing assets scrapped. This assumption clearly has an element of truth in it : ... But the method has major drawbacks. Firstly *net* investment would take no account of the ageing process of an existing asset which was not scrapped. The assumption would thus ignore what has been described as the "two dimensional" nature of capital : the essence of the productive asset is that it continues to render services over a long period ; its value is related not only to the service it renders in a given year, but also to the number of years over which it can be expected to remain productive. The second disadvantage of ignoring the ageing of assets is that it would imply a level of net profit and of national income fluctuating erratically according to the incidence of the scrapping of assets." (p. 142).

Obviously, Redfern, like all other authors quoted so far, takes for granted that the "ageing process" should be measured simultaneously. But, why should it be ?

From the point of view of an individual firm, with all the uncertainties about the future, the soundest way of calculating capital costs is on the basis of actual price paid (or which might be paid) for a capital asset spread

<sup>1</sup>I. Vinski : Investments in Croatia in the Inter-War Period (Investicije na području Hrvatske u razdoblju između dva svjetska rata), Ekonomski institut, Zagreb 1953 (mimeographed) ; Ekonomski institut FNRJ, Belgrade, 1955 (with an English summary). To Dr. Vinski I owe the term "new investment".

<sup>2</sup>In a personal letter later on Dr. Vinski accepted my arguments in principle.

<sup>3</sup>P. Redfern : Net Investment in Fixed Assets in the United Kingdom 1938-1953, *Journal of the Royal Statistical Society*, 1955.

over the life time of the asset. This is the only firm point of calculation. And that it is highly appreciated by firms clearly is shown by the deeply rooted practice of depreciating assets taking into account the original (or replacement) price and the expected life time. But why should this individual business accounting practice be obligatory for national product accounting?

It is, first, conceptually unsustainable. A firm may spread the costs of capital outlay over a number of years simply because there are many other firms from which to borrow the initial capital or to which to lend the idle depreciation funds. But a nation must calculate differently. Assuming a closed economy—because of limited international mobility of factors of production national economies are practically closed, and this is perfectly true for the world as a whole—replacement expenditures are not made out of depreciation allowances accumulated over the long period, neither are new investment outlays met out of accumulated profits or of borrowed capital. Both of them are paid out of the *current* national product.

Further, it has been shown above that the "two-dimensional nature of capital" is a great nuisance in an economic analysis of growth. Here one or two examples might be added. Take first the problem of age structure.

According to the Yugoslav capital census at the beginning of 1953 gross capital stock was depreciated to about the same extent in construction and transport industries, 47.4% and 49.7% respectively. Can we infer anything about the age structure from the comparison of these figures? It seems not. If we look directly at the age structure of these two industries we shall find that assets older than 32 years represented 31.7% of all assets in transport and only 4.8% in construction industry. Similar figures may be produced for manufacturing and mining as compared with state farms. If we are interested to find out when and how much capital assets have to be replaced, net capital stock or aggregate depreciation fund tell us practically nothing. In the other hand changes in gross capital stock, although one dimensional, will give us some practically useful information about the ageing process: if there is negative new investment, no matter what is the value of net investment,<sup>1</sup> this will be a clear indication that the assets are on the whole too old to be compatible with growth. Clearly, this can only be seen retrospectively. If we want to predict, special surveys of age structure are necessary.

Consequently net values are of no help in assessing the age of capital assets. They are of no help in assessing the quantity of them either. So, for instance, according to Redfern net value of British fleet was in 1953 greater than in 1938, but the gross value (= productive capacity measured, say, in tons) was less. Because of the war, losses were not fully compensated, but on the average the fleet was "rejuvenated". Has a net figure in this context any analytical value? One could say that the percentages of aggregate depreciation cannot be compared between various industries but have definite meaning within one industry: there is—recalling our table 1—one limit for net relative to gross capital stock, and above this limit necessary replacement is less than depreciation; thus even with negative net investment there might still be no change in the productive capacity. One has only to establish this limit empirically (it was 1:1.6 in the table 1). With respect to this limit the relative value of British fleet is today higher than it was before the war. But this is strictly so only on the assumption that there has been uniform investment in the industry both with respect to time and to the depreciation period of assets. Otherwise the limit is shifting, and we need special surveys again.

<sup>1</sup>It may be argued that net investment may serve as a supplementary indicator. Negative new investment shows the decline in the quantity of capital. The appearance of positive net investment shows that the decline is slowed down and is likely to be stopped in the future. But the same conclusion may also be derived from the comparison of new investment in two years.

The final argument of Redfern (the possibility of the erratic fluctuation of national income) seems to have missed the point. Our task is to measure economic phenomena as they are really occurring. If the movement is erratic, why should this not be reflected in statistical series? Now, if one defines national income as that part of national product which may be consumed without diminishing the productive capacity of the economy, i.e. without causing decline in total output—which, it is true, is usually implied, but is actually inapplicable to the conventional definition—then national income will statistically be derived from gross product by subtraction of replacement expenditures.

4. Finally, growth economists and model builders will have to deal with our problem too. The pioneering investigation in this field has been undertaken by Professor Domar. In his paper on the econometric approach to the economic growth<sup>1</sup> Domar introduced his approach by saying:

"In a growing economy . . . even with constant prices and correct depreciation charges (computed according to the straight-line method), the latter (i.e. depreciation) will considerably exceed replacement expenditures." (p. 493 or 33).

In two footnotes Domar quotes from his earlier (1951) unpublished paper, formulae for the ratio between replacement and depreciation and for the ratio between depreciation and gross investment. These two formulae correspond to our  $\alpha$  and  $\delta$  expressed in continuous form.

A year later (1953) Domar dealt with the same problem in a paper especially dedicated to it.<sup>2</sup> The paper represents an admirable discussion of the subject. But Domar failed to realize the general theoretical implications of his new approach. He thought he was describing a particular and not a general case. Thus he writes:

"If the productive capacity of the asset remained more or less intact to the end, our assumption that replacement takes place in one operation is not far from reality. On the other hand, if its productive capacity declines gradually over time its replacement by other assets (not necessarily within the same firm) is likewise a gradual process, and should the latter happen to move along a straight line,  $R$  and  $D$  become identical. If its capacity should decline particularly fast in the early years, replacement will exceed depreciation. *Thus the usually assumed identity of  $R$  and  $D$ , even in a growing economy (with constant prices), is not necessarily wrong.* . . . Within a reasonable range, it should be looked upon as a more or less extreme case, the opposite extreme being our present approach. As usual, the truth lies somewhere between them." (p. 12 or 167; italics mine).

However, this time exceptionally, the truth lies on one of the extremes, and the error in reasoning will be obvious from the foregoing analysis, in particular from the discussion in paragraph 21.

University of Manchester,  
November, 1956.

BRANKO HORVAT

<sup>1</sup>E. D. Domar: *Economic Growth: An Econometric Approach*, American Economic Review, Papers and Proceedings, 1952. Reprinted in: *Essays in the Theory of Economic Growth*, New York, Oxford University Press, 1957.

<sup>2</sup>E. D. Domar: *Depreciation, Replacement and Growth*, *Economic Journal* 1953; reprinted as above.—To the existence of this second paper of professor Domar my attention was called by professor Johnson, though only after my own paper had already been finished and prepared to be published. As it usually happens, after this discovery I immediately discovered some further articles dealing with the same subject. They are listed below and certainly are not the only ones which exist.—Eric Schiff: *A Note on Depreciation, Replacement and Growth*, *The Review of Economics and Statistics*, 1954. Hans Neisser: *Depreciation, Replacement and Regular Growth*, *Economic Journal* 1955. Robert Eisner: *Depreciation Allowances, Replacement Requirements and Growth*, *American Economic Review*, 1952. The comments on this article by M. Gordon with the rejoinder of Eisner were published in the same review in 1953. Cf. also Eisner's *Accelerated Amortization, Net Profits and Growth*, *The Quarterly Journal of Economics*, 1952, and Domar's: *The Case for Accelerated Depreciation*, *The Quarterly Journal of Economics* 1953.



# The Leontief Paradox Critically Examined<sup>1</sup>

One of the most fascinating theorems in international trade theory is named after two Swedish economists, Heckscher and Ohlin. In its original version it states that the most important cause of difference in comparative costs between countries is differences in relative factor endowments and that under free trade, without complete specialisation, and ignoring differences in demand conditions, there will be a tendency for absolute factor prices to be equalised.

This proposition seems to accord reasonably well with the observable facts, and was generally accepted until Professor Samuelson, stimulated by a student's question as to why factor prices were not fully equalised, demonstrated that under the usual general equilibrium assumptions, with one very important additional assumption, full equalisation of factor prices and not merely a partial tendency in that direction will be the result of free trade if specialisation is incomplete.<sup>2</sup>

The additional assumption is that one commodity is always capital-intensive as compared with the other irrespective of relative factor prices; this along with constant returns to scale implies a unique relationship between relative commodity prices, relative factor prices, and physical marginal products of factors, and leads to the conclusion that equalisation of commodity prices under free trade equalises absolute factor prices (unless complete specialisation occurs).

This conclusion had in fact already been stated by Heckscher.<sup>3</sup> It was also discovered that Lerner had come to the same

<sup>1</sup>This article has benefited greatly from several suggestions by Professor H. G. Johnson.

<sup>2</sup>P. A. Samuelson, "International Trade and the Equalisation of Factor Prices," *Economic Journal*, June 1948 and "International Factor-Price Equalisation Once Again," *Economic Journal*, June 1949.

<sup>3</sup>E. Heckscher. "The Effect of Foreign Trade on the Distribution of Income," originally in Swedish in *Ekonomisk Tidskrift* 1919, translated and published in *Readings in the Theory of International Trade*, 1949. See e.g. p. 287, "More important, however, is the conclusion that, with the same technique and the same price of products, the absolute returns to the factors of production must also be equalised."



conclusion in 1933, though his results were not published until 1952.<sup>1</sup>

If this additional assumption is not fulfilled however—a case which has been taken up by Pearce, Robinson, Jones and Johnson<sup>2</sup>—a country may specialise on the commodity which is intensive in *either* its abundant *or* its scarce factor, and factor prices may be *either* fully *or* only partly equalised, *or* the difference between them may be increased.

In view of the apparent sensibleness of the Heckscher-Ohlin proposition, it is no wonder that Professor Leontief's empirical investigation<sup>3</sup> of the factor intensity of U.S. foreign trade has attracted great attention. Everybody agrees that the U.S. has more capital per physical worker than the rest of the world (apart from Kuwait); so on the old Ohlin assumptions it was to be expected that the U.S. would export relatively capital intensive goods and import goods of a type in which domestic U.S. production was relatively labour intensive (barring the question of natural resources). Leontief's results were the opposite, viz. that the U.S. exports relatively labour intensive goods, whereas its import competing goods are relatively capital intensive. The results claimed by Leontief intensified the theoretical discussion (see especially the articles by Robinson and Jones) and also started

<sup>1</sup>A. P. Lerner, "Factor Prices and International Trade," *Economica*, 1952 and the appended "A Note on Mr. Lerner's Paper," by I. F. Pearce.

<sup>2</sup>S. F. James and I. F. Pearce, "The Factor Price Equalisation Myth," *The Review of Economic Studies*, 1951-52 and Pearce's note appended to Lerner's article; Romney Robinson, "Factor Proportions and Comparative Advantage," *Quarterly Journal of Economics*, May and August, 1956; R. W. Jones, "Factor Proportions and the Heckscher-Ohlin Theorem," *Review of Economic Studies*, 1956-57; H. G. Johnson, "Factor Endowments, International Trade and Factor Prices," *The Manchester School*, Vol. XXV, No. 3, September, 1957. The possibility that relaxation of the additional assumption might alter the conclusion was recognised by Samuelson (*loc. cit.* 1949, p. 188 n.1) and analysed by Lerner (*loc. cit.* pp. 11-14).

<sup>3</sup>W. Leontief, "Domestic Production and Foreign Trade; The American Capital Position Re-Examined," *Proceedings of The American Philosophical Society*, September 28, 1953 (referred to as Leontief I), reprinted in *Economia Internazionale*, February, 1954, and "Factor Proportions and the Structure of American Trade: Further Theoretical and Empirical Analysis," *Review of Economics and Statistics*, November, 1956 (referred to as Leontief II).

a discussion on the validity of his figures and conclusions.<sup>1</sup> It must be understood that several combinations of attitudes are possible of which the following three cover most of the ground.

(a) the Ohlin-Samuelson assumptions are relevant—the Leontief results are wrong ;

(b) the Ohlin-Samuelson assumptions are relevant—the Leontief results are right ;

(c) the Pearce-Robinson-Jones assumptions are relevant—the Leontief results are right.

We shall abstain from considering the possibility that the theory is all irrelevant and Leontief quite wrong, even though quite a number of economists might take that position.

While it is true that Leontief's figures surprised most economists it is fair to say that his conclusions were really startling. He suggested and defended the idea that U.S. workers are, say, three times as efficient as workers in the rest of the world. This is not connected with better managerial skill or more capital employed per worker but simply a better quality<sup>a</sup> which means that the U.S., contrary to the general assumption, is relatively well endowed with labour, measured in efficiency units, and is relatively short of capital. Consequently the pattern of U.S. exports and imports accords with the Ohlin-Samuelson assumptions. Leontief is therefore taking the position mentioned under (b) above.

It is not the purpose of this paper to give an exposition of the positions taken by the participants in the discussion. In many cases this is not even possible : some are exclusively interested in theoretical aspects and some are only criticising the figures. It is important, however, to relate the two things. After all it must be a primary aim to test the models with which we are working. On the following pages an attempt will be made to find out what Leontief has tried to measure, how successful he has been, and

<sup>1</sup>P. T. Ellsworth, "The Structure of American Foreign Trade: A New View Examined," and B. C. Swerling, "Capital Shortage and Labor Surplus in the United States," both in *Review of Economics and Statistics*, August, 1954 ; S. Valavanis-Vail, "Leontief's Scarce Factor Paradox," *Journal of Political Economy*, December, 1954 ; N. S. Buchanan, "Lines on the Leontief Paradox," *Economidla Internazionale*, 1955 and M. A. Diab, *The United States Capital Position and the Structure of its Foreign Trade*, Amsterdam 1956.

<sup>a</sup>Leontief I p. 344 and Leontief II p. 399.

what the implications are for our theoretical thinking. This will be done in the following way. We will try 1, to clarify the relation between the input-output model and the measurements made by Leontief ; 2, to give a schematic description of the procedure used by Leontief ; 3, to evaluate the reliability of his figures ; 4, to test Leontief's results and, 5, to draw up the conclusions of this analysis.

*1. The Leontief Paradox and the Input-Output Model.*

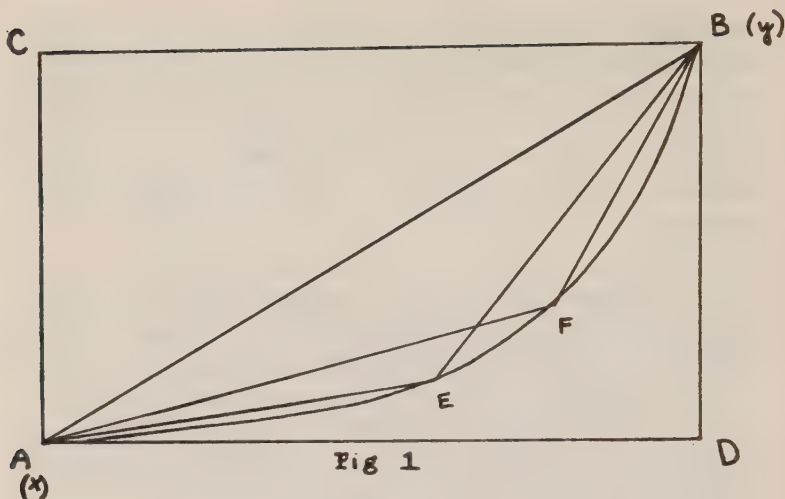
The question of the relation between Leontief's measurements and the input-output model is a rather confused one, and Leontief has unfortunately contributed to this confusion.

It is well-known that the primary characteristic of the input-output model and at the same time the most dubious feature of the model is the assumption of fixed coefficients of production. This means that the ratio of capital, labour, etc., input to the production of each good is fixed once and for all whatever is the scale of production, and presumably also whatever are the relative prices of the factors of production. It means that the ratio of factor inputs is the same whether a thousand refrigerators are produced or one million are produced, and whether the rate of interest is high or low relatively to wage rates. Most economists would probably be reluctant to accept findings regarding the character of international trade, which were dependent on the validity of these assumptions. It is one of the basic features of international trade theory that factor proportions in the production of one commodity vary with changes in relative factor prices.

As mentioned Leontief has himself contributed to the confusion about this point by a lengthy elaboration of an international trade model on the assumption of fixed coefficients of production.<sup>1</sup> As a matter of fact the measurements made by Leontief are not in any sense dependent on these assumptions. On the contrary the statistical information contained in the input-output tables is especially well suited to illuminate the character of U.S. foreign trade, as will appear from the following paragraphs.

In Fig. 1, is presented the ordinary box diagram that is used to illustrate the character of foreign trade. One country produces

<sup>1</sup>Leontief II pp. 386. Similar assumptions regarding the importance of the input-output model are made by Valavanis-Vail and Diab, see the works quoted in note 1, p. 162).



two commodities  $x$  and  $y$ , where the production function of  $x$  starts at  $A$  and that of  $y$  at  $B$ . Along the sides  $AC$  and  $BD$  is measured the total amount of labour available and similarly along  $AD$  and  $BC$  the amount of capital. The curve  $AEFB$  connecting  $A$  and  $B$  is the locus of optimal production possibilities. If this locus had been the straight line connecting  $A$  and  $B$  both commodities would always have had the same capital-labour ratio. On the function  $AEFB$ , however, it will be seen that  $x$  is always more capital intensive than  $y$ . Point  $E$  is supposed to be the production point before trade and it is seen that the angle  $AE-AD$  is smaller than the angle  $BE-BC$ , which means that  $y$  uses more labour per capital unit than  $x$ . This is true of any other point on the curve  $AEFB$ .

Now, after trade has been established it is supposed that the equilibrium point of production is  $F$ , which means that our country has relatively much capital and will therefore under trade expand its production of the capital intensive commodity  $x$ . The  $F$  capital-labour ratio of the export product is then measured by the angle  $AF-AD$  and the capital-labour ratio of its import competing commodity  $y$  by the angle  $BF-BC$ . This means again that these two slopes measure the *average* capital-labour ratio of the two commodities, and according to the Ohlin-Samuelson



model the angles referring to  $x$  and  $y$  should be as indicated in the country that is relatively capital rich, that is the U.S.

The statistics that are collected in the input-output tables are ideally suited to contribute to the measurement of these angles, as they inform us about the *average* input from sector  $i$  to sector  $j$  per unit output of sector  $j$ . The fact that the angles change as we move from  $E$  to  $F$ —which is an objection to the use of the input-output model to analyse such changes—is irrelevant to the measurement of the relative sizes of the angles, which is what is required for the present purpose. It may therefore be concluded that for the present purpose it is completely irrelevant to discuss whether the basic assumptions underlying the input-output model are valid or not. The statistical information that has been collected is well suited for our purpose, viz. to measure the angles referred to above, and in order to interpret the results of the statistical information it is necessary to use the same technique as used in the input-output model. This will appear from the following paragraph.

## *2. The Procedure Used by Leontief.*

Leontief has taken great pains to give a careful description of the procedure used in his computations, but for the sake of clarification it is considered convenient to give a brief exposition of the method he uses in order to arrive at capital and labour coefficients in U.S. export and import competing production. This procedure will be illustrated by the capital coefficients, but the same method is used as regards the labour coefficients. The procedure comprises three steps.

First a capital coefficient is measured for each product—we shall later return to the reliability of these measurements. The capital coefficient is simply the average amount of capital invested in the individual industry per unit of output; let us call this ratio  $c_i$  denoting the industry by  $i$ . Then  $c_i$  represents the direct capital coefficient for the individual industry.

Secondly it is necessary to obtain information on the total amount of capital which is necessary if industry  $i$  has to increase its final production by one unit. This must clearly be some weighted average of the direct capital coefficients of industry  $i$  and of all the other industries delivering inputs to industry  $i$  or to

industries which deliver inputs to such industries and so on. The computation of these weights requires the often mentioned costly solution of a large number of equations. Let us call this weighting system the internal weighting system and denote these capital coefficients by  $C_i$ , where the capital letter indicates that the capital coefficient includes both the direct and indirect capital requirements necessary to increase the output of sector  $i$  by one unit. The weights are denoted by a  $q$ . We then obtain the following expression

$$C_i = \sum_1^n q_i c_i \quad (i = 1 \dots n)$$

Thirdly we have to consider the composition of U.S. foreign trade in order to reach an expression of the average capital content in U.S. exports and U.S. import competing production. In order to do that the  $C_i$ 's of which there are  $n$  in total are weighted together according to the relative importance of each individual commodity in U.S. exports and import competing production respectively. The average capital coefficient in U.S. exports  $C_E$  can then be expressed as follows

$$C_E = \sum_1^m w_i C_i \quad (i = 1 \dots m)$$

where  $w_i$  is the ratio of exports of commodity  $i$  to total exports, and  $m$  the total number of export goods. Similarly a capital coefficient is computed for import competing products and also labour coefficients.

On paper this is all very simple but it is important to keep this simple structure in mind, that the coefficients are made up of a set of direct capital coefficients and two weighting systems, one from the input-output statistics and one from the foreign trade statistics.

### 3. *The Reliability of Leontief's Computations.*

A critical analysis of Leontief's findings may now proceed to an evaluation of first the direct capital coefficients, secondly the weighting systems, and thirdly the coverage of goods included.

The first point relates to the validity of the direct capital coefficients. These are the basis of the whole affair and one might very well have expected that Leontief would give a very detailed and careful account of how he arrived at these figures. Anybody

expecting that is seriously disappointed. In the first article the description of this point is superficial to say the least, as the reader is given only a hint in a footnote reference to a work on a different matter<sup>1</sup>, and even though some explanation is found there it is far from satisfactory.<sup>2</sup> In the second article by Leontief we are told a little more<sup>3</sup> but not enough by far. A discussion should be presented on whether to use stock figures or replacement information—stock figures are probably preferable. Furthermore something must be said of the different degrees of reliability of the various coefficients. It is a pity that satisfactory material on this important point is lacking. This lack of information prompts most readers to accept the figures without further ado.<sup>4</sup>

The second point concerns the weighting systems. Several points of criticism have been made in this respect mainly by Swerling,<sup>5</sup> but by and large this is the least debatable, but most debated, point. Most economists would probably agree that the input-output statistics contain the best available basis for a weighting system, and that the foreign trade weighting is reasonable, even though there are defects in both systems, for example, how should the import content of exports be treated, how can services be treated symmetrically in exports and imports? Some have claimed that the year 1947, which was used in the first article, is not representative of U.S. foreign trade, but in the second article Leontief has encountered this criticism by using 1951 in addition with about the same result as the 1947 figures, and it seems generally to be true that such criticism as there is may modify but cannot change the general result.

Finally we come to the very important point of coverage. Leontief himself excluded some commodities, viz. commodities which are not produced in the United States. These include coffee, tea and jute and some other products, which are considered non-competitive imports. However, he is reluctant to deal with the much more important question of what to do with

<sup>1</sup>Leontief I p. 335 and 336, footnote c).

<sup>2</sup>See also Diab p. 17.

<sup>3</sup>Leontief II p. 393.

<sup>4</sup>Diab rejects, however, the capital coefficients for agriculture, (ch. III), and cuts them almost into halves, but this does not materially affect the results.

<sup>5</sup>*Op. cit.*

commodities that rely heavily on natural resources. This problem is almost bypassed notwithstanding the fact that Leontief's own computations show that exclusion of these commodities would completely reverse his conclusions.<sup>1</sup> If they are excluded we obtain .88 instead of 1.06 when dividing the capital-labour ratio in imports by the ratio in exports. If goods relying to a large extent on natural resources are excluded we find the normally expected picture that the U.S. exports capital intensive goods and imports labour intensive goods.

Leontief's own treatment of this point is hardly convincing. We are given only a rather nebulous assertion that theoretically it would necessitate rather tenuous assumptions to exclude natural resource intensive industries from import competing products but not from export commodities.

Leontief's position in this respect is really very weak, indeed. To put it sharply he maintains the following: In some cases natural resources are so important for costs of production that they should be excluded from our computations, namely in those cases where the U.S. does not have these resources and it would be so costly to produce the goods by other methods that such production does not take place in the U.S. In other cases natural resources are also extremely important, but the goods requiring those resources should not be excluded, namely where the U.S. herself maintains some production of these commodities.

From a statistician's point of view this position may seem reasonable, because in the first case you do not have any U.S. data to measure, whereas you have in the second; but from a theoretical point of view there is no such sharp distinction when you have to analyse the direction of international specialisation of production. If natural resources are an important explanatory variable, then they are important in both cases.

Now, what are we going to do with natural resources? From the Ohlin-Samuelson model we know that as soon as more than two factors are assumed, the whole argument breaks down, because it is not possible to give the term relative factor intensity any meaningful definition. This is true enough, but I do not think we are quite lost on that account.

<sup>1</sup>Leontief II p. 395 and p. 398.



If it is possible to divide each economy in our international trade model into two sectors, one where all three factors, land, labour and capital are important, and one where only labour and capital are important for the production function the outlook may not be as gloomy as often assumed. Even though trade between the two countries does not balance for the two subgroups it is still true that if a country both imports and produces herself the commodities in the two factor group, we should on the Samuelson assumptions expect full factor price equalisation, because trade creates identical commodity prices which in turn presupposes identical factor proportions in the production of the same commodity in the two countries. When looking at the two countries before trade we may not be able to tell from the relative factor endowments how the specialisation will be in the 3-factor sector and the 2-factor sector respectively. If, however, we find that after trade equilibrium has been obtained the overall capital labour ratio is higher in the 2-factor sector in country A than in the similar sector in B, we would expect that within this sector A would export capital intensive goods and import goods that require relatively much labour in A's own production. Under certain circumstances it may even be possible to reach this result with knowledge only about the pre-trade overall capital labour ratios, but in the present case it is sufficient to use the observed capital labour ratios in the 2-factor sectors, as it is generally agreed that in this sector the U.S. has more capital per physical worker than the rest of the world.

This means that we should rather concentrate on goods where it is reasonable to assume that natural resources are not a primary element in costs of production, and this is particularly true of industrial goods, where Leontief's computations show that the U.S. specialises in capital intensive goods, whereas import competing production is relatively labour intensive—quite in accordance with general expectations.

The conclusion must therefore be that when we choose the most reasonable procedure, i.e. to exclude natural resource intensive production from the computation, we reach quite opposite results to what is claimed by Leontief.

#### 4. *An Empirical Test of Leontief's Conclusions.*

If it is true, as Leontief claims, that the U.S. has a comparative advantage in labour intensive production we would expect the U.S. to export more relative to its imports the more labour intensive a product is. This may not always be true, because we have to take differences in demand elasticities and elasticities of substitution into consideration, but it is tempting to set it up as a working hypothesis.<sup>1</sup> In so far as exports and imports of a specified group of commodities can be assumed to be characterised by the same production function or very similar production functions we can test the hypothesis that  $\frac{E_i}{I_i} = f\left(\frac{C_i}{L_i}\right)$  is a declining function, viz. the more capital relative to labour in the production of commodity  $i$ , the less is the ratio of exports to imports of that commodity.

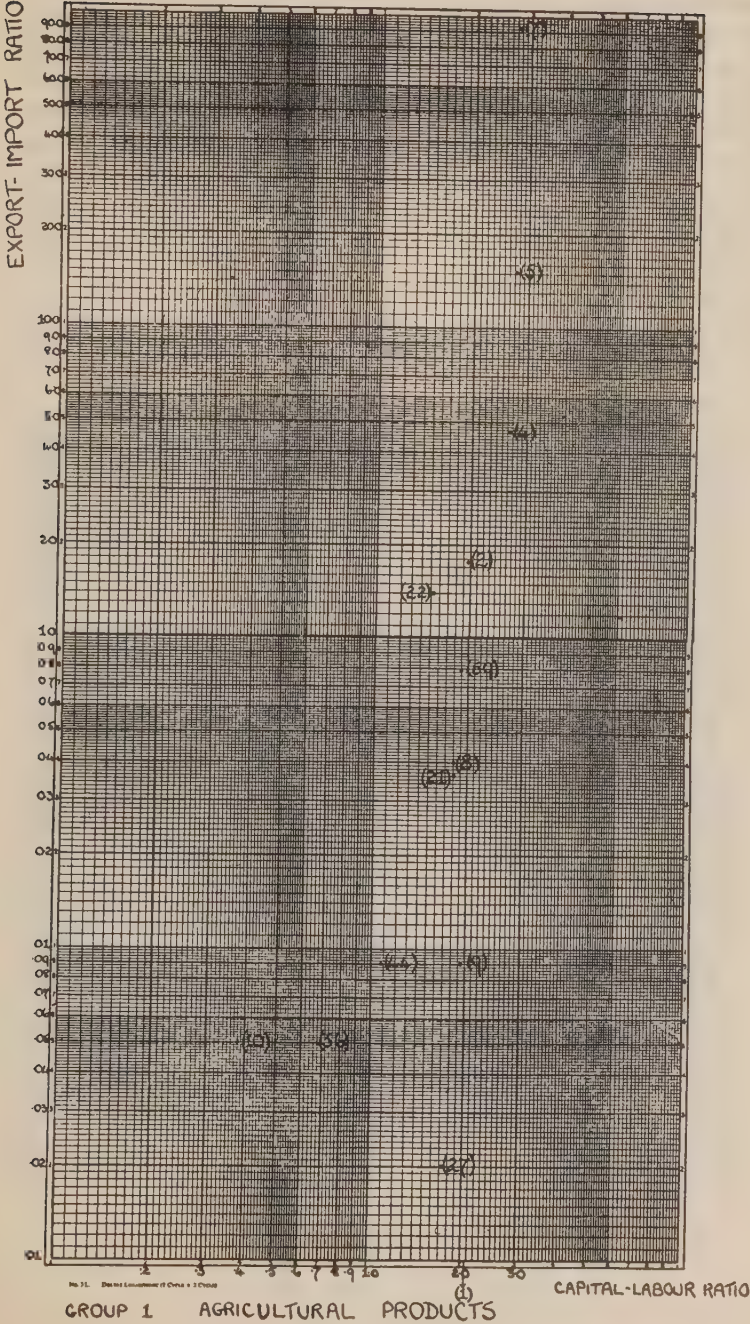
The statistics published by Leontief in the second article<sup>2</sup> permit a rough test along these lines. An appendix to that article gives the labour and capital ratios for each of 192 commodity groups, and figures for exports and imports per million dollars worth of each. From these figures may be computed two others, one giving the capital-labour ratio of each group, and the other giving the export-import ratio. In the table appended to this article and in the three charts below the results of these computations have been presented in a rearranged way. A division has been made between (1) agricultural commodities, (2) other natural resource intensive commodities and (3) manufactured goods. In several cases the selection of the commodities in the first two groups may be debatable, but for the general conclusion of this section it does not matter whether a few commodities are transferred from one group to another. The notes to the table list a fourth group, the commodities which have had to be excluded because of lack of data or because it would be meaningless to include them.

The first chart, Fig. 2, shows 14 observations in a group comprising agricultural products and also fishing and some wood products. The fourteen observations are clearly non-conclusive.

<sup>1</sup>This has been done by Leontief himself, but in a way which is difficult to follow (Leontief I pp. 346-348).

<sup>2</sup>Leontief II pp. 403-407.

FIG. 2.









It is typical of this group that the capital-labour ratios are rather high and the import surpluses very big, with one outstanding exception in coal, which seems to be rather labour intensive and shows a big export surplus. This group is then in accordance with Leontief's thesis from a general point of view ; but it is obvious from the scatter diagram that there is no functional relationship between the two ratios.

Finally Fig. 4 contains the observations on manufactured goods, which according to the previous section may be considered two factor commodities.

The scatter diagram of these commodities is also disappointing, as it is obvious that it is not possible to create a function that gives any meaningful interpretation of the observations.

It seems fair to conclude that this test has not supported the Leontief thesis, but it is important to note that it has not supported the opposite thesis either, i.e. that the U.S. specialises in capital intensive commodities.

#### *5. Concluding Remarks.*

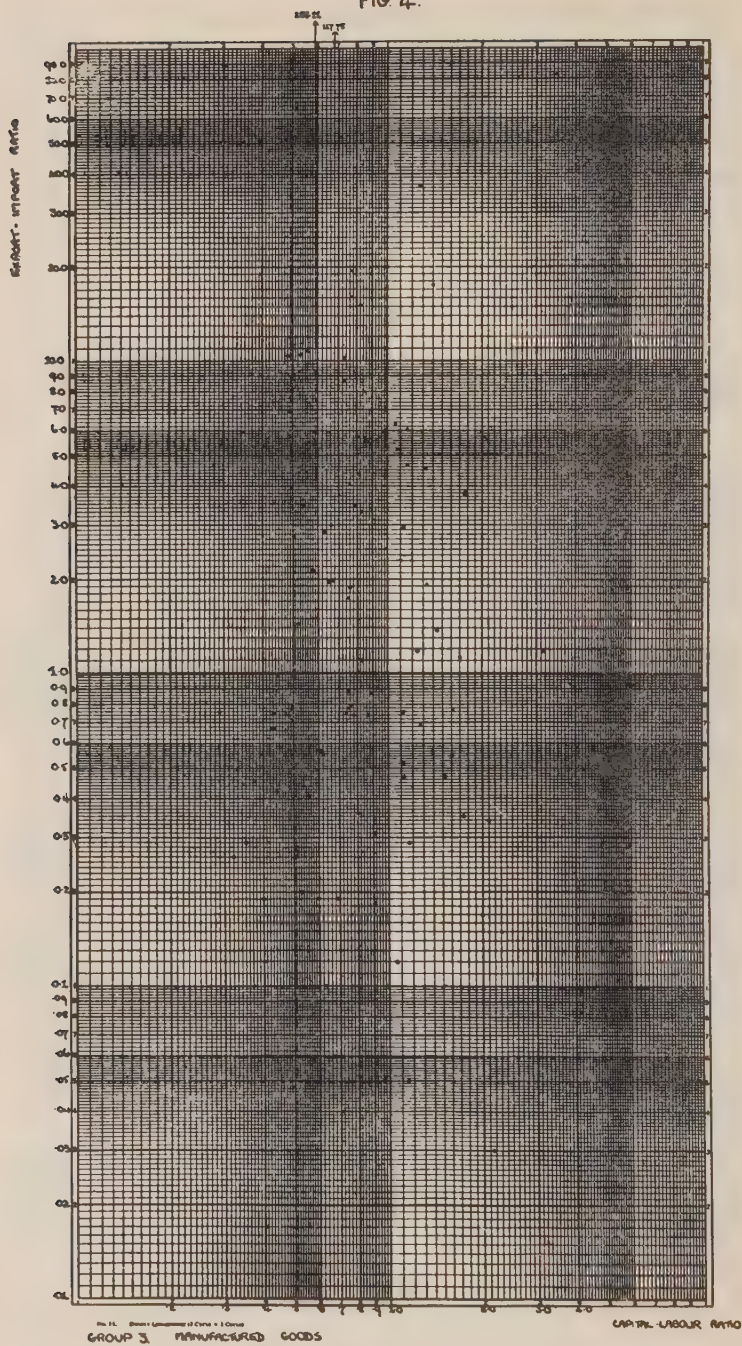
It is a sad fact that in economics we have a serious lack of empirical data that throw light on our basic theorems, and that whenever figures appear they are eagerly quoted irrespective of how unreliable they are. This makes it imperative that each investigation shall be carefully explained. In this respect Leontief's calculations need to be clarified in two directions :

1. Much more information on the direct capital coefficients is needed. How are they computed? How reliable are the figures ?
2. What is the explanation of the computation which—after exclusion of natural resource intensive industries—shows the opposite result of the one originally claimed by Leontief?

These are the fundamental questions, whereas the problems of the accurateness of the weighting systems seem to be of minor importance.

It is the general tenor of this article that the Leontief figures do not prove what he claims, not to speak of his interpretation of the figures. Still there is no doubt that this empirical work has

FIG. 4.



helped to shatter the belief in the practical relevance of the Heckscher-Ohlin theorem. It is symptomatic that Pearce, Robinson, Jones and Johnson in their theoretical reasonings concentrate on cases which both Lerner and Samuelson<sup>1</sup> treated with perfect clarity but with comments that these were special cases which were only interesting from an academic point of view.

It must be admitted that most economists would have placed a fairly large bet beforehand that the Leontief investigation would have shown that U.S. exports are more capital intensive than her import competing products. Even though according to our analysis the opposite must be concluded from the figures as presented, it is still not by a big margin and the special test presented in section 4 did not point either way, so that the matter remains in an unsatisfactory state.

This leads then to the final point to be made here. Is it possible to conceive of a better way of investigating this problem than the one used by Leontief? He analyses a cross-section of the present foreign trade picture, thereby tacitly assuming that this picture portrays the long-run equilibrium in a fairly reliable way. Another method would be to draw up a vertical picture, i.e. to trace the different rates of growth of the various commodities, and by analysing these obtain a better understanding of the forces that determine the pattern of trade. This method has been tried by the present author, in a work on the problem of the dollar shortage.

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<sup>1</sup>Samuelson. *loc. cit.* (1949) p. 188 and his note to the article by Pearce, *Review of Economic Studies* 1951-52, p. 121 ; Lerner, *loc. cit.* pp. 11-14, who even offers a penetrating analysis of several shifts back and forth as regards relative factor intensity of two commodities.

## APPENDIX

	<i>Capital-Labour Ratio</i> (1)	<i>Export-Import Ratio</i> (2)
<b>Group 1. Agricultural Products</b>		
1. Meat animals and products ...	2.07	.008
2. Poultry and eggs ... ..	1.98	1.74
4. Food grains and feed crops ...	2.63	4.63
5. Cotton ... ..	2.71	15.18
7. Oil bearing crops ... ..	2.75	92.24
8. Vegetables and fruits ... ..	1.80	.40
9. All other agricultural products ...	1.93	.09
10. Fisheries, hunting and trapping ...	.38	.05
21. Meat packing and poultry ...	1.80	.36
22. Processed dairy products... ..	1.53	1.40
27. Sugar ... ..	1.71	.02
36. Logging ... ..	.68	.05
44. Pulp mills ... ..	1.09	.09
59. Vegetable oils ... ..	1.90	.79
<b>Group 2. Mining, etc.</b>		
11. Iron ore mining ... ..	1.37	.14
12. Copper mining ... ..	1.56	.00
13. Lead and zinc mining ... ..	.88	.01
14. Bauxite mining ... ..	.96	.03
15. Other non-ferrous mining ...	1.41	.01
16. Coal mining ... ..	.58	85.48
17. Crude petroleum and natural gas...	3.28	.10
18. Stone, sand, clay and abrasives ...	1.05	.05
20. Other non-metallic minerals ...	1.80	.07
51. Synthetic rubber ... ..	1.90	.01
82. Primary copper ... ..	2.15	.20
84. Primary lead ... ..	1.66	.00
86. Primary metals, n.e.c. ... ..	1.61	.02
88. Primary aluminium ... ..	2.46	.00
<b>Group 3. Manufactured Goods.</b>		
23. Canning, preserving and freezing...	.91	.31
24. Grain mill products ... ..	1.78	3.88
25. Bakery products ... ..	.89	.87
26. Miscellaneous food products ...	1.24	1.19
28. Alcoholic beverages ... ..	1.15	.05
29. Tobacco manufactures ... ..	1.16	.29
30. Spinning, weaving, dyeing ...	.87	.74
31. Special textile products ... ..	.71	.04
32. Jute, linen, cordage and twine ...	.69	.19
34. Apparel ... ..	.43	.67
35. House furnishings and other non- apparel ... ..	.75	1.74
37. Sawmills, planing and veneer mills	.53	.20
38. Plywood ... ..	.47	.03
39. Fabricated wood products ...	.43	.75
40. Wood containers and cooperage ...	.40	.19
41. Wood furniture ... ..	.44	.42
45. Paper and board mills ... ..	1.06	.12
46. Converted paper products ...	.83	3.30
47. Printing and publishing ... ..	.58	2.14
48. Industrial inorganic chemicals ...	1.13	.47



	Capital-Labour Ratio (1)	Export-Import Ratio (2)
<b>Group 3—continued.</b>		
49. Industrial organic chemicals ...	1.60	.55
50. Plastic materials ... ..	1.40	17.66
52. Synthetic fibre ... ..	1.11	.52
54. Drugs and medicines ... ..	.73	10.13
55. Soap and related products ...	1.14	2.96
56. Paints and allied products ...	1.16	4.64
57. Gun and wood chemicals ...	1.06	6.25
58. Fertilizers ... ..	1.12	.76
60. Animal oils ... ..	1.33	1.91
61. Miscellaneous chemical industries	.98	6.00
62. Petroleum products ... ..	3.12	1.18
63. Coke and products ... ..	2.10	.34
64. Paving and roofing materials ...	1.32	4.59
66. Miscellaneous rubber products ...	.65	1.96
67. Leather tanning and finishing ...	.56	.41
68. Other leather products ... ..	.32	.26
69. Footwear (excluding rubber) ...	.29	.76
70. Glass ... ..	.83	1.10
71. Cement ... ..	1.44	1.38
73. Pottery and related products ...	.35	.29
74. Concrete and plaster products ...	.78	.74
75. Abrasive products ... ..	.75	.78
76. Asbestos products ... ..	.76	4.02
77. Other miscellaneous non-metallic minerals ... ..	.80	.36
78. Blast furnaces ... ..	2.15	.03
79. Steel works and rolling mills ...	1.61	.77
80. Iron foundries ... ..	.73	8.70
81. Steel foundries ... ..	.63	2.89
83. Copper rolling and drawing ...	1.75	.35
87. Non-ferrous metal rolling, n.e.c....	1.70	1.13
89. Aluminium rolling and drawing ...	1.51	.47
90. Secondary non-ferrous metals ...	2.00	.17
91. Non-ferrous foundries ... ..	.76	.79
92. Iron and steel forgings ... ..	1.08	5.28
93. Tin cans and other tin ware ...	1.28	36.50
94. Cutlery ... ..	.61	.57
95. Tools and general hardware ...	.66	3.00
96. Hardware, n.e.c. ... ..	.68	117.75
97. Metal plumbing and vitreous fix- tures ... ..	.77	16.16
100. Boiler shop production, and pipe bending ... ..	.85	5.72
101. Metal stampings ... ..	.76	1.89
103. Lighting fixtures ... ..	.77	19.65
104. Fabricated wire products... ..	1.28	.69
106. Tubes and foils ... ..	.96	.05
109. Nuts, bolts, and screw machine products ... ..	.74	.75
110. Steam engines and turbines ...	.49	6.95
113. Farm equipment ... ..	.75	.88
116. Machine tools and metal working machinery ... ..	.80	5.81
117. Special industrial machinery ...	.80	5.04

	Capital-Labour Ratio (1)	Export-Import Ratio (2)
<b>Group 3—continued.</b>		
124. Commercial machines and equip- ment, n.e.c. ... ..	.56	10.89
127. Ball and roller bearings ... ..	.54	3.46
129. Wiring devices and graphite pro- ducts ... ..	.70	3.74
131. Motors and generators ... ..	.50	2.77
135. Electrical appliances ... ..	.67	1.98
138. Electrical lamps ... ..	.53	10.62
139. Radio and related products ... ..	.42	47.26
145. Motor vehicles ... ..	.82	15.12
148. Aircraft and parts ... ..	.50	.98
149. Ships and boats ... ..	.62	.56
152. Motorcycles and bicycles ... ..	.60	.19
153. Instruments, etc. ... ..	.59	258.11
154. Optical, opthalmic, and photo equipment ... ..	.52	1.44
155. Medical and dental instruments and supplies ... ..	.79	3.48
156. Watches and clocks ... ..	.67	.06
157. Jewellery and silverware ... ..	.63	.10
158. Musical instruments and parts ... ..	.40	.12
159. Toys and sporting goods ... ..	.47	.66
160. Office supplies ... ..	.48	10.52
161. Plastic products ... ..	.86	5.61
162. Cork products ... ..	.70	.50
164. Miscellaneous manufactured pro- ducts ... ..	.59	.16

Columns (1) and (2) are computed from figures given in Leontief II, pp. 403-407. Column (1) relates to the total direct and indirect requirements per million dollars of final output—capital (\$0000) divided by labour (man-years). Column (2) is exports per million dollars of total exports divided by competitive imports per million dollars of total competitive imports for 1951 expressed in 1947 prices. Owing to lack of information the following items, which amount to just under 40 per cent. of the total, have been excluded from the calculations :

3. Farm dairy products, 6. Tobacco, 19. Sulphur, 33. Canvas products, 42. Metal furniture, 43. Partitions, screens, shades, etc., 53. Explosives and fireworks, 65. Tyres and inner tubes, 72. Structural clay products, 85. Primary zinc, 98. Heating equipment, 99. Structural metal products, 102. Metal coating and engraving, 105. Metal barrels, drums, etc., 107. Miscellaneous fabricated metal products, 108. Steel springs, 111. Internal combustion engines, 112. Farm and industrial tractors, 114. Construction and mining machinery, 115. Oil-field machinery and tools, 117. Cutting tools, jigs, and fixtures, 119. Pumps and compressors, 120. Elevators and conveyors, 121. Blowers and fans, 122. Power transmission equipment, 123. Industrial machinery, n.e.c., 125. Refrigeration equipment, 126. Valves and fittings, 128. Machine shops, 130. Electrical measuring instruments, 132. Transformers, 133. Electrical control apparatus, 134. Electrical welding apparatus, 136. Insulated wire and cable, 137. Engine electrical

equipment, 140. Tubes, 141. Communication equipment, 142. Storage batteries, 143. Primary batteries, 144. X-ray apparatus, 146. Truck trailers, 147. Automobile trailers, 150. Locomotives, 151. Railroad equipment, 163. Motion picture production, 167. Electric light and power, 168. Natural, manufactured and mixed gas, 169. Railroads, 170. Trucking, 171. Warehousing and storage, 172. Overseas transportation, 173. Other water transportation, 174. Air transportation, 175. Pipeline transportation, 176. Wholesale trade, 177. Retail trade, 178. Local and highway transportation, 179. Telephone and telegraph, 180. Eating and drinking places, 181. Banking, finance and insurance, 182. Hotels, 183 Real estate and rentals, 184. Laundries and dry cleaning, 185. Other personal services, 186. Advertising, including radio and television, 187. Business services, 188. Automobile repair services and garages, 189. Other repair services, 190. Motion picture and other amusements, 191. Medical, dental, and other professional services, 192. Non-profit institutions.

## Books Received

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- AGRICULTURAL ECONOMICS RESEARCH INSTITUTE : *The Agricultural Register. New Series. Changes in the Economic Pattern 1956-7.* University of Oxford. 21s. pp. 234.
- CHACKO, K. C. : *The Monetary and Fiscal Policy of India* with a foreword by Dr. C. R. Whittlesey. Vora & Co., Publishers Private Ltd., Bombay. 30s. pp. 386.
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# The Control of Imports: A Case Study<sup>1</sup>

THE UNITED KINGDOM IMPORT RESTRICTIONS OF 1951-2

## I. INTRODUCTION

Import restrictions are by now a generally accepted instrument of balance of payments policy. Their effect can be divided into two parts, the direct impact on imports and the indirect effect of the expenditure diverted from imports. The most important questions about the first of these concern the magnitude and speed of the effect ; while the main questions about the second are the extent to which import restrictions reduce investment through their effects on stocks, or increase savings through the expenditure prevented by import restrictions not leading to equal expenditure on alternative goods.

This article attempts to answer these questions through a case study of the import restrictions imposed by the United Kingdom in 1951-1952. Part II describes the extent of control over imports at the onset of the 1951 crisis and the nature of the cuts made. Part III examines the fall in imports in 1952 and attempts to determine how much of this fall was due to the 1951/2 import restrictions, thereby providing an estimate of the direct effect of the restrictions on imports. Part IV is concerned with the speed with which this direct effect on imports was attained. Parts V and VI deal with the effects on stocks and saving and Part VII evaluates the episode, compares the policy followed with the alternatives that might have been adopted and expresses some qualifications as to the relevance of the experiment to future policy.

<sup>1</sup>This paper is part of a larger study on *The Control of Imports in Post-war Britain* being undertaken at the National Institute of Economic and Social Research by Mrs. M. F. W. Hemming and the author. The project is financed by the Rockefeller Foundation.

The author is indebted to Mrs. Hemming for assistance and criticism at every stage and to other members of the staff of the Institute. The work has also benefited from the help of various officials of the Board of Trade.

## II. THE 1951/2 IMPORT CUTS

(a) *Import control before the cuts*

Before describing the cuts actually imposed in November 1951 and subsequently, it is useful to review the extent to which imports were subject to government control of some kind at this time. There were two main ways in which imports were controlled: first, a substantial volume of imports was still subject to government trading and second, a certain sector of private imports was controlled by means of import licensing.

The main object of the cuts was to stop the acute drain on the reserves; since the immediate impact of imports from the sterling area affected mainly the level of sterling liabilities and not that of the gold or dollar reserves, it was only non-sterling imports that were cut. Table I indicates the extent of government importing and of control of private imports on the eve of the cuts and distinguishes between sterling, dollar and other non-sterling imports (the impact on the reserves being the fullest and most immediate in the case of dollar imports).

Products have been classified on the basis of the type of control applying at mid-1951, and weighted by the c.i.f. value of imports for the whole year 1951.

TABLE I  
EXTENT OF GOVERNMENT CONTROL OVER IMPORTS  
BY CURRENCY AREAS IN 1951<sup>1</sup>

£ million c.i.f.				
	Sterling area	Dollar area	Rest	Total
Government imports ...	417	447	554	1,418
Private restricted ...	97	236	251	584
Private unrestricted ...	879	17	990	1,886
Total <sup>2</sup> ...	1,393	700	1,795	3,888

<sup>1</sup>This table is derived from a larger statistical study being undertaken at the National Institute by Mrs. C. Miles and Mr. G. Ray, which classified imports by type of control each year from 1945-57.

<sup>2</sup>Excluding parcel post, etc. (Class E).

The table shows that state trading applied to 37% of all imports, 40% of non-sterling imports and 64% of dollar imports. The government had complete control over these imports but the possibility of curtailing them was in some cases limited by contracts entered into with foreign suppliers<sup>1</sup> and also by the need to meet minimum requirements of food for essential consumption and of raw materials to maintain home production.

Of total private imports, 24% were subject to licensing control. Practically all private imports from the dollar area, Japan, Argentina and Eastern Europe required specific licences of some kind. There remained a large sector of private imports on which there was no direct or detailed control. Most were subject to "Open General Licence," which meant simply that individual importers needed no specific permission to import the particular goods from the sources specified by the "O.G.L." Some products were imported subject to "Open Individual Licences" which were issued to individual importers who could then import without restriction from the specified sources.<sup>2</sup>

Practically all private imports from the sterling area, and about 87% of private imports from a group of non-sterling, non-dollar countries termed, for import licensing purposes, the "relaxation" area, were subject to "O.G.L.s" or "O.I.L.s" and hence in fact were unrestricted.<sup>3</sup>

<sup>1</sup>At the end of 1951 the Ministry of Food had 51 long-term contracts running, but most of these were with sterling area suppliers and none with dollar suppliers. Of Ministry of Food 1951 imports from non-sterling, non-dollar sources, about 50% were subject to long-term contracts, two-thirds of these being imports from Denmark of bacon, butter and eggs. Cf. "Note on British Long-term Food Purchase Contracts," *Economic Bulletin for Europe*, August 1951; *The Long-term Contract*, F.A.O. Commodity Policy Studies No. 3 (Rome, April 1953); and, C. Leubuscher, *Bulk Buying from the Colonies* (Oxford University Press, 1956).

<sup>2</sup>A useful outline of the development of import licensing techniques in Britain post-war is provided by A. M. Leyshon, "Import Restrictions in Post-war Britain," *Scottish Journal of Political Economy*, October 1957.

<sup>3</sup>The relaxation group consisted of the countries from which controls on imports were relaxed in 1950/1. It included the non-sterling members of the O.E.E.C. and their dependencies, and all other non-sterling, non-dollar countries except the Soviet Union and her East European satellites, Yugoslavia, Iran, Argentina, Japan and Korea. The main non-O.E.E.C. countries included were Brazil, Egypt, the Anglo-Egyptian Sudan, Finland, Spain and Indonesia.

(b) *The general scope of the import cuts*

On 7th November 1951, shortly after the Conservative Government had come into office, the new Chancellor of the Exchequer, Mr. Butler, announced drastic import cuts designed to restore external balance. Further import cuts were announced in January and March 1952. Together they were supposed to reduce imports by £600 million in relation to the original programme for 1952 imports.

It is not easy to establish the detailed composition of the proposed £600 million cut on the basis of published statements, but the following table summarises such details about the breakdown as were published.<sup>1</sup>

Several points should be noted about this table.

- (1) The £600 million cuts were on a *programme* and not on the actual imports of 1951 or some other previous period. It had originally been intended to provide for an increase in imports, compared with 1951; the original programme for *visible* imports was £3,620 million f.o.b.<sup>2</sup> compared with *visible* imports in 1951 of £3,491 million.
- (2) The assumed import cut of £600 million depended in part on cuts or assumed reductions in *invisibles* (the cut in tourist expenditure and the reduction in freight costs expected as a result of the cuts in visible imports).
- (3) The cuts in visible imports were of three distinct kinds. First, cuts in the programme of government imports, in particular the imports of the Ministry of Food; second, cuts in the programme of private imports

<sup>1</sup>The Table includes only items specifically referred to in relation to the £600 million cut. In addition two other measures taken at the time which affected imports should perhaps be mentioned. At the end of 1951 a cut was announced in *token imports* from N. America from 40 to 30 per cent. of their pre-war value; the effect of this would have been relatively small, not more than £1 million. Secondly, the same Budget speech in which the March 1952 cuts were announced, contained three *fiscal proposals* tending to reduce imports: the suspension of duty-free imports of machinery, an increase in the duty on petrol and various other oils and the beginning of a major operation to reduce food subsidies. The effect of these measures was too uncertain in timing and extent to be included in the £600 million cut.

<sup>2</sup>*Hansard* (Commons), 7th November 1952, col. 19.



subject to control; third, and most significant, restrictions were again placed on a wide range of private imports from O.E.E.C. and other relaxation sources which had recently been freed.<sup>1</sup>

**TABLE II**  
**THE IMPORT CUTS 1951-2**  
(Published Reductions on the 1952 Import Programme)

						£ million f.o.b.
<b>Reductions announced November 1951</b>						
Ministry of Food import cuts <sup>1</sup>	...	...	...	...		70
Revocation of Open General Licences (i.e. new restrictions on private imports)						
Foods	...	...	...	...	100	
Manufactures	...	...	...	...	30	
						130
Revocation of Open Individual Licences for softwood						
Reduction in strategic stockpiling						
Reduction in tourist allowance <sup>2</sup>	...	...	...			150
"Saving of shipping and a general tightening up and closer administrative scrutiny of external expenditure"						
						350
<b>Reductions announced January 1952</b>						
Cut in tobacco programme	...	...	...	...		22
Cut in coal imports from United States	...	...	...	...		2.5
Reduction (further) in tourist allowance	...	...	...	...		12.5
Other	...	...	...	...		113
						150
<b>Reductions announced March 1952</b>						
Revocation of Open General and Individual Licences	...	...	...	...		20
Other	...	...	...	...		80
						100
<b>Total Cut in the Programme</b>						<b>600</b>

Sources : *Hansard* (Commons), 7th November 1951, cols. 197-9 ; 9th November 1951, col. 499 ; 29th January 1952, col. 47 ; 11th March 1952, col. 1279.

<sup>1</sup>Ministry of Food import cuts in November were originally given as about £60 million (*Hansard*, 9th November 1951, col. 499), but later turned out to be £70 million (*Hansard*, 29th January 1952, col. 47).

<sup>2</sup>The tourist allowance was reduced from £100 to £50 p.a. per person in November 1951 and to £25 in January 1952.

<sup>3</sup>Most of the products concerned had been on "relaxation O.G.L." (i.e. unlicensed from the "relaxation area"). A few, notably softwood, had been on Open Individual Licence. Some items, in particular certain horticultural products, biscuits and chocolate and sugar confectionery, had been on "block licences"; i.e. imports had been free up to a certain total, which in the case of biscuits and confectionery was such that imports were for practical purposes uncontrolled.

As can be seen from Table II, it is not possible to allocate the planned cuts of £600 million clearly as between visibles and invisibles or as between cuts in imports already subject to control and the so-called "deliberalisation" of imports which were at the time uncontrolled. It is evident, however, that this latter group was expected to account for something over one-quarter of the total.<sup>1</sup> But it is important to note that, while the programme, both of government imports and of private imports subject to control, was a form of "plan," the figure in the original programme for private uncontrolled imports was purely an estimate or forecast; consequently the accuracy of any estimate of the saving due to these cuts (put at around £150 million) depends in part on the accuracy of the original forecast.<sup>2</sup>

(c) *The "deliberalisation" of private imports*

Although it represented only about a quarter of the total expected saving, it was the restoration of control over imports recently liberalised that attracted most attention at the time and which will be studied most closely here. It was a major—if temporary—retreat from the much publicised "liberalisation" programme introduced only a short time before in the

<sup>1</sup>As Table II shows, the revocation of Open General Licences in November 1951, was expected to save £130 million f.o.b., and in March 1952, £20 million f.o.b. To this should be added (a) the restriction of softwood imports, involving the revocation of Open Individual Licences, for which no estimate of the expected saving was published, and (b) the reduced expenditure on invisible account (shipping) associated with lower imports of goods for which O.G.L.s and O.I.L.s had been revoked. This expected saving in invisibles was included in the £600 million total, but not in the separate figures for the revocation of O.G.L.s.

<sup>2</sup>There may have been a further cut in the 1952 import programme after March 1952, but as no details were announced no account has been taken of it here. Cf. Chancellor, *Hansard* (Commons), 29th July 1952, cols. 1278-9 and the exchange between Mr. Gaitskell and the President of the Board of Trade, *Hansard* (Commons), 30th July 1952, col. 1611. Furthermore it appears that some of the announced figures of the cuts discussed here were subsequently amended without the amendment being made public. Therefore the meagre figures in Table II should not be taken as indicating more than orders of magnitude.

O.E.E.C.,<sup>1</sup> largely under British leadership, and involved a reduction in Britain's "liberalisation percentage" from 90 per cent. to 46 per cent.<sup>2</sup> Since British imports are now almost entirely in private hands and largely uncontrolled, it is this experience of re-imposing control on free private imports which might be of greatest interest for the future.

The process of deliberalisation consisted of three stages. The first stage was the publication of a list of commodities removed from O.G.L. Secondly, prospective importers of these commodities were invited to apply for licences, giving certified data of their imports of the particular commodity groups<sup>3</sup> concerned during a previous period. Finally, sometimes after a considerable interval, quotas were announced for each of the commodity groups<sup>4</sup> and importers were then granted licences on the basis of their share in total imports of the particular group of commodities in the relevant period.

An important feature of the new system of import controls established in 1951 was the use of the non-discriminatory

<sup>1</sup>Under this liberalisation programme member countries agreed to free imports from other members up to certain minimum levels. By October, 1951, this minimum for total imports was 75% of a country's total private O.E.E.C. imports, Britain having freed 90%. The percentage depended only on whether imports were subject to control, not on how tightly the controls were administered, and only on the proportion of *private* imports subject to control. The weight given to different imports was determined by the value of the imports from O.E.E.C. sources in 1948.

An excellent detailed description of the liberalisation of intra-O.E.E.C. trade can be found in F. Boyer and J. P. Sallé, "The Liberalisation of Intra-European Trade in the Framework of O.E.E.C.", *I.M.F. Staff Papers*, February 1955. See also W. Diebold, *Trade and Payments in Western Europe* (New York, Harper Bros., 1952), and *Annual Reports* of the O.E.E.C.

<sup>2</sup>In 1951 imports of the goods deliberalised were 53% of total private imports from relaxation sources. This figure gives a better indication of the scope of the import cuts than does the change in the O.E.E.C. liberalisation percentage, since the latter (i) does not allow for imports from outside the O.E.E.C. region, (ii) uses a more remote year as a statistical base and (iii) excludes petroleum from the calculations.

<sup>3</sup>Altogether 105 separate licensing groups were introduced for which import quotas were established; 67 in November, later increased to 69; 36 in March 1952. In addition there was a quota for softwood. The base period for most of the items restricted in November was the first half of 1951 and for the items restricted in March the calendar year 1951.

<sup>4</sup>For certain materials removed from O.G.L. (or O.I.L.) no quota figure was published.

"global quota."<sup>1</sup> This was in accordance with the non-discrimination principles of the O.E.E.C. code. The essence of the "global quota" was that the import allocations issued to individual importers could be used to buy items within the relevant quota from any of the countries in the "relaxation area." For some materials, notably softwood, the area covered was rather more "global," including the whole non-sterling world.

Table III gives a summary of the goods covered by the deliberalisation process and its effects. The Table includes all the products removed from relaxation Open General Licence, Open Individual Licence or Block Licence in November 1951 and March 1952 and also a few products, such as fondant, which had not previously been free, but of which imports were to be further reduced. The main items deliberalised were unrationed foods of various kinds, textile goods, timber, paper and wood-pulp. The Table shows a substantial fall in all these imports from the area affected.

Table IV gives a comparison of imports before and after the cuts with the values of the quotas established for the main items and groups of items for which quotas were published.<sup>2</sup> It will be noticed that in the case of a certain number of items restricted in November, quotas were published for the first half of 1952 but not for the second (biscuits, chocolate confectionery) or for the second half of 1952 and not for the first (cake, fondant and minor food items). There are also a number of small items (total quotas £1,101,000 in the first half of 1952 and £2,695,000 in the second) for which separate import statistics are not recorded in the United Kingdom Trade Accounts. For certain fruits and vegetables there were no separate quotas for the second half of 1952 but twelve-month quotas covering the

<sup>1</sup>It was the first time Britain used the "global quota" on a large scale, though a few global quotas had been established by Britain and other countries before November, 1951. (See *The Use of Quantitative Restrictions to Safeguard Balance of Payments*, G.A.T.T., October 1951, pp. 18 and 72). The term "global quota" was used pre-war in a completely different sense. See H. Heuser, *Control of International Trade* (London, G. Routledge & Sons Ltd., 1939), pp. 80-1.

<sup>2</sup>Apart from two cases both quotas and imports relate to the relaxation area only. There was one November quota (£200,000 for fur and skin manufactures) which covered also imports from the U.S.S.R. and one March quota (£1,600,000 for bladders and casings) which included imports also from Canada, U.S.A. and Guatemala.



second half of 1952 and first half of 1953 ; for these items the import figures are given for the same twelve-month period. A comparison of Tables III and IV indicates that quotas were published covering approximately 35 per cent. of the imports affected by the November cuts and 75 per cent. of those affected by the March cuts. The large discrepancies between the import figures and the corresponding quotas in certain cases are due partly to the fact that the quota periods were rather longer than the half years to which they referred, and partly to the fact that certain imports were admitted outside the quotas (*see Part IV (a) below*).

TABLE III

IMPORTS FROM THE RELAXATION AREA OF ITEMS AFFECTED BY  
NOVEMBER 1951 AND MARCH 1952 CUTS

£000 c.i.f.

	1951		1952	
	1st half	2nd half	1st half	2nd half
<b>(1) Items affected by November 1951 cuts :</b>				
Food ... ..	77,531	74,463	47,415	27,395
Non-food				
Carpets ... ..	5,889	1,633	528	379
Apparel ... ..	1,987	2,204	2,541	1,789
Softwood, plywood and veneers ... ..	27,233	68,029	20,125	20,689
Paper and board ... ..	25,807	35,559	14,953	7,016
Paper-making materials <sup>1</sup> ... ..	48,677	72,319	64,898	24,410
Other manufactures <sup>2</sup> ... ..	10,067	9,463	6,066	4,880
Total of "November" items ... ..	197,191	263,670	156,526	86,558
<b>(2) Items affected by March 1952 cuts :</b>				
Food ... ..	5,825	7,045	6,755	5,484
Non-food				
Textile yarns, piece-goods and manufactures	34,215	38,935	23,765	17,081
Hardwood ... ..	5,800	7,895	2,908	1,866
Horticultural items <sup>3</sup> ... ..	1,255	4,715	970	3,281
Miscellaneous materials and manufactures <sup>4</sup>	11,301	10,440	9,231	4,680
Total of "March" items ... ..	58,396	69,030	43,629	32,392
<b>(3) Total of items affected by Nov. &amp; Mar. cuts</b>	<b>255,587</b>	<b>332,700</b>	<b>200,155</b>	<b>118,950</b>

Sources: Compiled from basic figures supplied by the Board of Trade. The figures include items restricted by quotas and/or otherwise.

<sup>1</sup>Woodpulp, esparto and strawpulp.

<sup>2</sup>Including dressed leather, paper manufactures, sports goods, glassware, imitation jewellery, furniture, certain drugs, footwear, gloves, hat hoods, food and drink machinery.

<sup>3</sup>Flower bulbs, flower and herbage seeds.

<sup>4</sup>Including matches, hard haberdashery, hollow-ware, marble, cork and manufactures, rape seed and oil, tung oil, turpentine, certain gums, resins and waxes, sole leather.

TABLE IV.—COMPARISON OF QUOTAS AND IMPORTS FROM THE RELAXATION AREA OF ITEMS AFFECTED BY  
 NOVEMBER 1951 AND MARCH 1952 CUTS

Items affected by November 1951 cuts :	1951		1st half 1952		2nd half 1952	
	1st half	2nd half	Quotas		Quotas	
			No. (5)	Value	No. (5)	Value
FOOD						
Biscuits, chocolate confectionery and couverture, raw cocoa (1)...	8,109	6,196	3	2,040	—	—
Fondant and cake mixtures (2) ...	4,839	3,418	—	—	2	860
Cocoa products ...	1,247	994	2	626	2	106
Preserved and frozen fruit and vegetables ...	1,209	1,506	6	369	3	710
Canned and fruit juice, pulp and puree and vegetables in brine ...	6,831	17,020	5	3,015	5	7,400 (3)
Tomato and other meat (incl. poultry, ham, bacon and offals) ...	34,008	23,916	6	17,653	5	8,429 (3)
Nuts and natural essential oils ...	7,641	7,830	2	3,500	2	9,070
Sugar fat mixtures, syrups, honey and jellies ...	5,674	2,872	4	3,500	4	8,243
Fresh fruit (4) ...	6,570	9,378	7	1,781	4	2,745
Other foods ...	1,403	1,333	4	440	13	1,085
NON-FOOD						
Carpets ...	5,889	1,633	2	1,475	4	1,407
Apparel and dressed furs ...	2,655	2,695	2	1,550	4	575
Office machinery ...	635	821	2	300	2	870
Sports and leather goods ...	900	928	2	525	2	2,081
Imitation jewellery ...	907	863	1	450	2	261
Furniture, domestic and glassware ...	2,017	1,997	1	875	1	353
Paper goods and stationery ...	2,008	2,004	5	1,025	5	713
Other manufactures ...	381	651	3	395	3	1,116
Total (food and non-food) ...	93,343	86,055	60	37,502	60	29,794 (6)
Items for which no comparable import figures are available	—	—	7	1,101	9	293
Total of November 1951 quotas	—	—	67	38,603	69	31,755 (6)
Items affected by March 1952 cuts :						
FOOD						
Cheese, unrationed ...	3,653	5,215	—	—	1	4,388
Bladders and casings ...	1,774	1,424	—	—	1	810
Other food ...	398	406	—	—	2	286
NON-FOOD						
Textile yarns, piece-goods and manufactures	34,215	38,935	—	—	6	12,566
Machines ...	761	623	—	—	1	422
Building materials and glass ...	880	969	—	—	5	685
Other manufactures ...	1,221	1,646	—	—	9	845
Rape seed and rape seed oil ...	904	319	—	—	9	806
Total (food and non-food) ...	43,806	49,537	—	—	1	810
Items for which no comparable import figures are available	—	—	—	—	26	22,378
Total of March 1952 quotas	—	—	—	—	10	24,276

Sources : Number and values of quotas from Board of Trade Journal, 24th Nov. 1951, p. 1070 ; 19th April 1952, p. 787 ; 31st May 1952, p. 1092.

(1) No quotas published for these items for the second half of 1952.

(2) No quotas published for these items for the first half of 1952.

(3) Quotas for these items were issued for 12 months to June, 1953 ; import figures are therefore given for the same period. Imports for the items concerned during the first half of 1953 for comparability.

(4) Including cucumbers.

(5) Number of quota values published. Except as noted, differences between the two half-years are due to combination or subdivision of quotas for an unchanged group of goods.

(6) The total quota values for the second half of 1952 include £7.4 million of imports of the items concerned during the first half of 1953 for comparability.

total imports include £3,398,000 of imports of the items concerned during the first half of 1953 for comparability.

### III. THE DIRECT EFFECT OF THE IMPORT CUTS

#### (a) The overall fall in imports in 1952

In the event, imports fell quite sharply in 1952. The movement of imports, both in total and from various sources, is shown in the Chart below. There was a fall both in the volume of imports and in import prices. The fall in volume was roughly in line with the revised import programme of March 1952.<sup>1</sup>

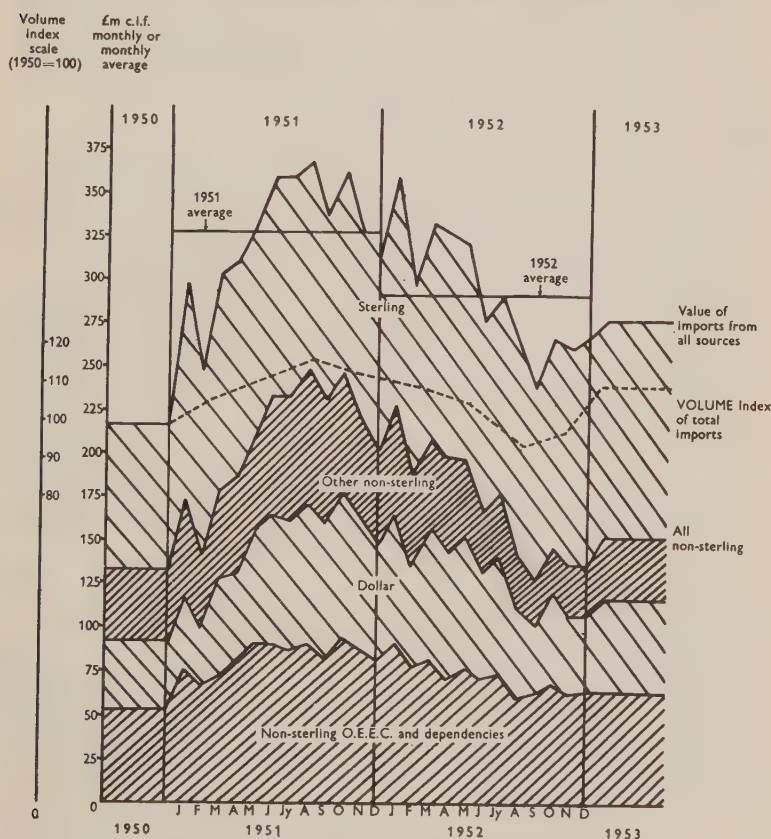


CHART : The Movement of United Kingdom Imports 1951 and 1952

<sup>1</sup>The import programme for 1952, as after the March cuts, was £3,150 million f.o.b. at the prices ruling at the beginning of the year. But import prices fell in the course of 1952 so that average prices for the year were about 4% below those ruling at the beginning of the year. Taking 4% off the programme figure, we get £3,024 million f.o.b. which is very close to the actual value of imports in 1952 of £2,944 million f.o.b.

Following the Commonwealth Finance Ministers' Conference called early in 1952 to deal with the sterling crisis, the British Government agreed to aim at overall current balance by the second half of 1952, including a non-sterling deficit equal to American Defence Aid. In fact, Britain overshot these targets and achieved an overall current surplus of £93 million in the second half of 1952, and instead of a non-sterling deficit of £63 million (the amount of American Defence Aid) a non-sterling surplus of £21 million. The object of the present section is to assess the role of the import cuts in achieving these results, and particularly in producing the fall in imports which was the main element in the overall improvement.

There were other reasons for the fall in imports in 1952. The 1951 boom had been mainly a stockbuilding boom—total stocks had risen by £575 million, including a rise of £82 million in stocks of mainly imported commodities.<sup>1</sup> It was to be expected therefore that 1952 should see a decreased demand for additions to stocks; in the event, stocks as a whole rose by only £50 million, those of mainly imported commodities by £39 million. This reduction in stockbuilding affected particularly raw materials, paper and various manufactures and canned foods. There was also a recession in consumer demand, particularly of consumer durables and clothing; this, too, followed on abnormal stocking-up in 1950 and 1951, partly through fear of war and partly as a hedge against rising prices.

On the other hand, there were reasons why certain imports were likely to *increase* in 1952 as compared with 1951. First, the rearmament programme tended to increase imports of engineering products, metals and even textile piece-goods. Secondly, increasing supplies were becoming available of some sterling area foods, in particular meat from New Zealand and oil seeds from Nigeria.

To isolate the effect of the import cuts we have to ask what would have happened in their absence. This cannot be done on an overall basis; the recession, the rearmament programme

<sup>1</sup>Cf. M. Fg. Scott, "Changes in Stocks of Mainly Imported Goods in the United Kingdom," *Bulletin of the Oxford University of Statistics*, February 1958.



and the import cuts themselves did not all affect the same sectors nor did they affect all sectors equally; moreover increases in some sectors may have been a result of cuts in others. The only satisfactory approach to the problem must be a piecemeal one : to look at each of the main imports subject to restrictions individually and to ask how the various influences would have affected the particular imports concerned in the absence of restrictions.

TABLE V  
THE FALL IN IMPORTS 1951-2

	£ million c.i.f.		
	1951	1952	Change
<b>Non-Sterling</b>			
Private Imports newly restricted November 1951 and March 1952 ...	588	319	-269
Other Imports possibly affected by the cuts			
Government food imports <sup>1</sup> ... ..	569	488	- 81
Private dollar food imports ... ..	12	7	- 5
Dollar tobacco imports ... ..	56	24	- 32
Raw cotton ... ..	214	93	-121
Coal ... ..	9	2	- 7
Other ... ..	560	476	- 84
Imports affected by the Defence Programme			
Ores, metals and manufactures of metals ...	224	366	+142
Machinery ... ..	66	121	+ 55
Petroleum ... ..	195	133	- 62
<b>Total Non-Sterling</b> ... ..	<b>2,493</b>	<b>2,029</b>	<b>-464</b>
<b>Sterling</b>			
Food and drink ... ..	548	654	+106
Materials and manufactures ... ..	740	574	-166
Petroleum ... ..	105	200	+ 95
<b>Total Sterling</b> ... ..	<b>1,393</b>	<b>1,428</b>	<b>+ 35</b>
<b>Total Imports <sup>2</sup> (Sterling plus Non-Sterling)</b>	<b>3,886</b>	<b>3,457</b>	<b>-429</b>

Sources : Trade and Navigation Accounts and Table III.

<sup>1</sup>Includes only items on Government account in both years (e.g. dollar apples, restored to private trade at the end of 1951, are excluded). Oil seeds, nuts and kernels for extracting oil are treated as "Food."

<sup>2</sup>Excluding "animals not for food" and "parcel post" (Group E in the Trade Accounts).

Table V analyses in detail the £429 million c.i.f. fall in the value of imports between 1951 and 1952.<sup>1</sup> First it separates sterling from non-sterling imports, showing a rise of £35 million in the former and a fall of £464 million in the latter. This fall in non-sterling imports is, in turn, divided into four main classes: (i) the private imports newly restricted in November 1951 and March 1952—the private “deliberalised” category in which we are mainly interested—which fell by £269 million; (ii) government imports and various private imports already under control which were probably affected by the cuts and which fell altogether by £330 million; (iii) imports affected by the defence programme which *rose* by £197 million; and (iv) petroleum imports which fell by £62 million mainly as the result of the opening of the Fawley refinery. This led to an increase in crude petroleum imports (mostly from sterling sources) of £78 million and a decrease in imports of refined products (from various non-sterling sources) of £45.5 million.

(b) *Fall in imports in the “private deliberalised” sector*

In this sector, where total imports fell by £269 million between 1951 and 1952, detailed estimates have been made, item by item, of how much of the fall could be attributed to the restrictions and how much to other factors. The results are summarised in Table VI below.

It can be seen that, of the total fall, some £89 million (with a margin of error of + £30 million or — £50 million) is estimated as due to the restrictions, the remainder being an estimate of the fall in imports in this sector which would have occurred in the absence of the restrictions.

The basis of these detailed estimates is given in the Appendix. It is sufficient here to indicate the general principles on which they were constructed. First, when actual imports in 1952 were below the published quotas, so that the quotas were not filled, it has generally been assumed that the restrictions had no effect at all on imports. Secondly, in those cases where

<sup>1</sup>The fall in the f.o.b. value of imports (balance of payments basis) was very much larger, £547 million. The difference was due to timing, most imports being paid for considerably in advance of their arrival. Payments had begun to fall off at the beginning of 1952 while arrivals were still at a high level; there was an exceptional volume of “stocks afloat” at this period.

there were no published quotas, it has been assumed that the restrictions made no difference if there was clear evidence of excess supply in the British market. In the remaining cases where there was evidence of excess demand, an attempt has been made to estimate free demand, taking into account the increase in real disposable income, the stock build-up in 1951, the effect of the recession, and (where relevant) the availability of the most important competing supplies.

**TABLE VI**  
ESTIMATED EFFECT OF THE NEW RESTRICTIONS ON PRIVATE IMPORTS  
(Value of imports from "relaxation" sources)

£ million c.i.f.

£ million C.I.T.

	Total fall in imports 1951-2	Fall due to restrictions					Fall due to other causes
		Upper limit	Lower limit	Best guess	Effect on : Consumption	Stocks	
<b>Items where restrictions are estimated to have had some effect</b>							
Foods: Canned meat ...	27.3	19.6	4.0	17.6	} 53.7	} 10.0	9.7
Sugar products and substitutes ...	14.6	17.6	8.6	14.6			—
Other foods restricted November 1951 ...	31.5	37.5	19.5	31.5			—
Unrationed cheese ...	0.8	2.5	0.8	2.5	2.5	—	-1.7
Timber: Softwood ...	48.9	25.9	5.5	15.3	—	15.3	33.6
Hardwood ...	8.9	5.1	—	5.1	2.9	2.2	3.8
Other items...	9.4	4.2	0.2	2.2	1.1	1.1	7.2
<b>Total ...</b>	<b>141.4</b>	<b>112.4</b>	<b>38.6</b>	<b>88.8</b>	<b>60.2</b>	<b>28.6</b>	<b>52.6</b>
<b>Items where restrictions are estimated to have had no effect</b>							
Paper and paper making materials ...	71.1	—	—	—	—	—	71.1
Plywood and veneers ...	5.6	—	—	—	—	—	5.6
Textiles and apparel ...	32.2	5.0	—	—	—	—	32.2
Other items ...	18.6	—	—	—	—	—	18.6
<b>Total ...</b>	<b>127.4</b>	<b>5.0</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>127.4</b>
<b>Total : all items to which restrictions applied ...</b>	<b>268.8</b>	<b>117.4</b>	<b>38.6</b>	<b>88.8</b>	<b>60.2</b>	<b>28.6</b>	<b>179.9</b>

The fact that actual imports exceeded the quota did not always imply that the quota was filled, since certain imports were admitted outside the quota, e.g. where contracts had been made before the restrictions were announced or if the goods were already on the high seas at the time of the restrictions. In the case of textile manufactures, the excess of imports over the quota was due to government imports for defence. It is estimated that altogether nearly 40 quotas were not filled, the main ones being the quotas for carpets and textile yarns.

There was definite evidence of excess supply in 1952 in the market for paper and board, paper-making materials and plywood. It is also clear that the authorities would have been prepared to license more dressed leather and more veneers than actually came in. In the case of all these items therefore, it has been assumed that the restrictions made no effective difference to imports in 1952.

The main effect of the import cuts was in the food field. The free demand for the wide range of unrationed or "frivolous" foods affected by the November cuts depended mainly on the supply of essential foods, the level of stocks (in the case of the less perishable foods) and disposable income. In most cases the stock build-up during 1951 and the improvement in supplies of essential foods tended to depress demand in 1952, while the increase in real income tended to raise it. We have assumed that on balance free demand was the same as in 1951, with two exceptions. (i) Stockbuilding of *canned meat* had been particularly intense in 1951 and the supply of carcase meat particularly low; here we have estimated 1952 free demand as somewhat lower than in 1951. (ii) *Cheese* was restricted only in March 1952, and demand had been rising sharply prior to the cut: here we have assumed that free demand would have remained at the high first-quarter level rather than reverted to the lower average of 1951.

The only other case where the import cuts had any noticeable effect was timber. The cut in softwood could not affect consumption which was subject to direct control, but probably reduced stocks to a little below the level they would otherwise have attained. Hardwood consumption was not directly controlled but there was a falling off in demand, particularly from



the furniture trade. Imports from the sterling area (which were not cut) also fell (by 36%) but not nearly as much as those from O.E.E.C. and other sources affected by the cuts (62%). It is assumed here that in the absence of the cuts total imports would have fallen proportionately no more than those from the sterling area.

It may be noted that Table VI is concerned only with the effect of the restrictions in 1952. No attempt has been made to assess their effect on imports in 1953, or in later years. On the basis of the 1951 value of imports, about 20 per cent. of the imports cut in 1951 and 1952 were freed again in March 1953, 30 per cent. in November 1953, and 47 per cent. were still controlled at the beginning of 1955.<sup>1</sup>

*(c) Fall in Government and private controlled imports*

To estimate the effect of the cuts in government imports and in imports under control before November 1951, involves a comparison not with unrestricted imports but with what would have happened under the programme which preceded the cuts.

The planned value of the cuts in this sector may be estimated at about £400 million.<sup>2</sup> But no details were given of a large part of this sector and as a total this figure probably overstates the actual effect of the cuts for two reasons. In the first place there was a fall in prices which was not foreseen in the original programme but most of which would have occurred in the absence of the cuts. Secondly, the demand for some raw

<sup>1</sup>Most of the items restricted in March 1952, notably textiles, were freed again in March 1953. Most of the foods restricted in November 1951 were freed during 1953, though the various sugar-containing goods and sugar substitutes remained subject to control until the operation of the Sugar Bill in January 1957. The import control on softwood was removed at the end of 1952, and the consumption control in November 1953. For the purpose of the percentages given in the text, softwood (14% of the imports affected, on a 1951 basis) has been treated as freed November 1953. Paper and paper-making materials (30%) were freed in 1956, the last really important item in the group to have remained under control.

<sup>2</sup>From Table II it can be seen that of the total cut of £600 million the new restrictions on private imports (November and March) were expected to save £150 million f.o.b. The remaining £50 million is a rough guess at the combined savings expected from (1) the reduction in freight, etc. associated with the cut in private imports, (2) the cut in tourist expenditure (the actual fall between 1951 and 1952 was £21 million) and (3) the revocation of the Open Individual Licence for softwood.

materials would anyhow have fallen below the level allowed in the original programme ; this applies especially to coal and cotton.

There were undoubtedly some cuts in government non-sterling food imports, private dollar food imports and dollar tobacco imports. The total fall in this group was £118 million c.i.f. but in so far as the original programme provided for an increase in imports of some of these items this figure understates the effect of the cuts.<sup>1</sup> On the other hand, the fall in imports of some foods, notably butter, was due to supply shortages and not to deliberate import cuts.<sup>2</sup> Moreover, in other cases, e.g. dollar cheese and sugar, the fall may have been due to decisions reached before November 1951.

In addition there was a cut in strategic stock-piling, the size of which is not known since the amount of such stock-piling in the original programme was not published. The value of physical additions to strategic stocks was £127 million in 1951 and £49 million in 1952, a fall of £78 million. *The Economist*<sup>3</sup> estimated the November cut in strategic stocks at £100 million, but to this must be added a further cut in January. On the other hand, some of the reduction in strategic stock-piling may have affected food imports, and thus duplicated some of the £118 million fall referred to above.

It is evident that material is not available for a refined estimate of the effect of the cut in government and private-controlled imports. As a very rough order of magnitude they may have been responsible for reducing imports by some £200 million—with a margin of error of at least £50 million each way.

<sup>1</sup>In the case of tobacco the original programme may have provided for a decrease on 1951 imports, for actual imports (despite a slight rise in price) fell by more than the announced amount of the cut (£32.3 million c.i.f. compared with the announced cut of £22 million f.o.b.).

<sup>2</sup>Non-sterling butter imports fell £5 million. This was due to low supply availabilities for the British market from Denmark and the Netherlands, originating perhaps in low prices paid by the Ministry of Food, but not in any refusal to take all supplies available at the agreed prices.

It is also possible that the fall in linseed oil imports from the Argentine was due to a running down of stocks accumulated there, and not to United Kingdom import cuts. (See Commonwealth Economic Committee, *Vegetable Oils and Oilseeds*, H.M.S.O., 1954, p. 122).

<sup>3</sup>10th November 1951, p. 1129.

But this figure, such as it is, cannot simply be added to the previous estimate of the effects of the cuts in the private deliberalised sector, since the estimates of the two sets of cuts are not independent. The former figure of £89 million was based on an estimate of the free demand for the deliberalised items *given* the supply situation of essential foods. Thus the estimate of free demand for unrationed cheese assumed as given the supply shortage of rationed cheese. But this supply shortage was itself the result of the cuts in government food imports. Similarly, if there had been no cuts in government sugar imports from the dollar area the free demand for various privately-imported sugar substitutes would have been less. The overlap, in fact, mainly concerned sugar and cheese, of which government non-sterling imports fell by £25 million. This may therefore be taken as a rough guide to the extent of double counting between our estimate of the effect of the cuts in government imports and in those in the private deliberalised sector.

*(d) The rise in sterling imports*

To what extent can the rise of £35 million in sterling area imports be attributed to the effects of the cuts in non-sterling imports?

In the first place it may be noted that a considerable part of the increase was accounted for by petroleum, due, as explained above, not to the import restrictions but to the opening of a new refinery. If petroleum is excluded from the figures, there turns out to have been a *fall* and not a rise in the value of imports from the sterling area.

Apart from petroleum, it was only food imports which increased. But the only part of this which seems likely to have been connected with the cuts in non-sterling food was the rise in canned meat imports from Australia and New Zealand.<sup>1</sup> Apart from this, since the general policy was to buy all sterling food available, the rise in food imports from the sterling area was determined mainly by supply conditions, influenced by

<sup>1</sup>See Appendix.

long-term contracts and price policies, as well as seasonal conditions.<sup>1</sup>

(e) *Summary of the direct effect of the import restrictions*

- (i) The *new* restrictions imposed in November 1951 and March 1952 had a relatively small effect on imports. Despite the prominence given to them in discussion of the 1951/2 import cuts, they were only intended to produce about one-third of the £600 million cut. In fact they were probably responsible for less than one-sixth of the fall in imports. They probably did reduce imports of timber and privately-traded food, but imports of paperpulp and textiles—three of the main products to which the new restrictions applied—would in any case have fallen to the extent they did.
- (ii) The cuts in imports of commodities already controlled (by government purchase or import licensing) probably played a greater part in producing the fall in imports, but there is insufficient information to allow of any precise assessment of their effects.
- (iii) Finally, while imports of food from the sterling area rose, so compensating for the fall in non-sterling food imports, this cannot, on the whole, be regarded as a direct result of the import restrictions.

#### IV. THE SPEED OF THE FALL IN IMPORTS

(a) *Excess of imports over quotas*

Although for 1952 as a whole the volume of imports fell approximately to the programmed level, the fall was not very marked in the early months (*see Chart*). Moreover in the first half of 1952 actual imports of many of the goods covered by the

<sup>1</sup>The rise in imports of oils and fats was due mainly to recovery after an abnormally poor groundnut harvest in Nigeria in 1951. The large rise in meat imports from New Zealand was clearly not due to import substitution since non-sterling meat imports had not been cut; in fact "red meat" shortage due to failure of Argentine supplies in 1951 was an important issue in the October election.

As regards sugar, the United Kingdom was committed to buying up to 1,640,000 tons a year from the Commonwealth, whereas actual supplies forthcoming from the Commonwealth in 1952 were only 1,290,000 tons.



restrictions substantially exceeded the amounts laid down in the quotas (*Table IV*). Indeed the fact that the quotas were intended to cover the 8-month period November 1951 to June 1952 makes the excess of actual imports in the first six months of 1952 even more striking.

There were three main reasons for this excess of imports over the published quotas :

(1) The first reason was the desire to avoid breaking contracts.<sup>1</sup> To this end imports subject to firm contracts or on the high seas at the time of the announcement of the restrictions were allowed to come in freely.<sup>2</sup> The value of the licences issued for goods under contract was sometimes deducted from the value of the licences to which traders were entitled under the quotas. But this was not always possible, for it might require a large importer to cease importing altogether once the contracted goods had come in.<sup>3</sup>

(2) Secondly, in some cases the United Kingdom was committed under bilateral trade agreements to permit a level of imports above the quota levels. Under these agreements the British authorities were bound to allow free entry of specified goods from the countries concerned up to stated limits. These provisions of the agreements were usually allowed to expire as soon as possible, but while they operated they meant that countries which had their bilateral quotas effectively cut by the new global quotas were sometimes compensated by the issue of supplementary licences. So long as imports of the goods concerned were unrestricted bilateral quotas were of no

<sup>1</sup>*Hansard* (Commons), 13th March 1952, col. 1600 and 10th June 1952, col. 13.

<sup>2</sup>The precise arrangement was that (a) goods which were actually *en route* at the time of the announcement of the restrictions would be admitted under Open General Licence, and (b) goods not *en route* at the time but which were the subject of contracts or irrevocable letters of credit entered into before the date of the announcement would require licences, but these would be issued freely. (See *Board of Trade Journal*, 15th March 1952, p. 538).

<sup>3</sup>"It will not however be possible for the full value of licences issued to certain importers since 11th March to be set against these importers' entitlements, and for certain commodities the total value of the licences already issued and of the licences to be issued under the quota is likely to be considerably in excess of the figure given in the Schedule." (*Board of Trade Journal*, 31st May 1952, p. 1092).

importance, but with the new restrictions they turned out to be a useful insurance for the countries benefiting from them.<sup>1</sup>

(3) Thirdly, many concessions were made to avoid hardship to overseas suppliers or to British traders or consumers. For example, questions in Parliament elicited that the strawberry import quota was more than doubled at the request of the French Government on the grounds that the restriction had been in danger of seriously hurting a particular French locality.<sup>2</sup>

*(b) Other reasons for delay*

There were other reasons why the import cuts had delayed effects. In some cases there was considerable delay in the preparation of the licensing arrangements. For example, although the decision to restrict paper imports was announced on 7th November 1951, details were not published until the end of December.<sup>3</sup> The operative action in restricting imports was the revocation of O.G.L.s. The delay between this stage and the publication of the quotas was much greater in the case of the March cuts than it had been in November: in the latter case it was only a fortnight, in the former nearly two months. If anything the greater gap might have been expected to cause a more sudden fall in imports, but it is not easy to find evidence of this.<sup>4</sup>

Long-term contracts were another factor delaying the effect of cuts in government imports. Moreover, where imports are highly seasonal, the speed of effect depends on the relation of the date of the cut to the normal buying season. Thus, for instance, the autumn dollar-tobacco auctions had already taken place when the cuts were announced in January 1952. The

<sup>1</sup>These bilateral trade agreement quotas probably accounted for the striking excesses of actual imports in the first half of 1952 over the published quotas for fresh fruit and vegetables, chocolate and sugar confectionery and couverture, biscuits and canned meat, ham and bacon (cf. Table IV).

<sup>2</sup>See *Hansard* (Commons), 10th June 1952, col. 12. The global quota for strawberry imports in the second half of 1952 was increased from £65,000 to £165,000. There were many other examples, such as fruit-pulp, where the quota for the first half of 1952 was raised from £480,000 to £895,000 (*Hansard*, Commons, 10th June 1952, col. 13).

<sup>3</sup>*Board of Trade Journal*, 22nd December 1951, p. 1280.

<sup>4</sup>Possibly the reason for the increased interval between announcement of the restrictions and publication of the quotas was the desire to avoid the November experience of publishing quotas far below the actual imports which would be allowed to enter.

cuts could therefore not affect purchases before the autumn of 1952 nor arrivals until towards the end of the year.

(c) *Effect of the recession on the speed of fall in imports*

The actual fall in imports in 1952 would undoubtedly have been both slower and less in the absence of the recession. In the first place, the fall in demand reduced the pressure for hardship concessions of various kinds. Secondly, it meant that a number of quotas were not taken up. Finally, it caused a fall in various imports (e.g. sterling area materials) not affected by the cuts, though this was in part offset by the rise, especially in the early part of 1952, of imports connected with the defence programme.

(d) *Conclusion : the speed of the import restrictions*

The actual course of imports in 1952 was thus the result of a complex of causes, some interacting on each other, and not all connected with the import cuts. Of the items cut, one group, where excess demand still persisted (mainly unrationed foods), fell less than expected, largely through the operation of trade agreement quotas, contracts and hardship allowances ; another group, where demand had fallen sharply as a result of the recession (notably paper, pulp and timber), fell rather more than expected ; while a third group (mainly manufactures) fell, on balance, approximately as planned. The effects of the cuts on imports as a whole were further blurred by the effects of the recession on the one hand and of the increased defence programme on the other on those imports not affected by the cuts.

It is not easy, in view of the timing of the other factors, to trace the delay in the impact of the import cuts themselves. The evidence suggests that it took some six months before the effects of trade agreement quotas, contracts and hardship allowances and so on had fully worked themselves out, although some effects of the cuts were certainly felt well before six months.<sup>1</sup>

<sup>1</sup>Although imports did not generally fall to the quota levels in the early part of 1952, in many cases they did fall quite rapidly. The food imports restricted in November started to decline in December 1951, and after a little recovery fell steadily from April onwards until by June imports of the group were less than half the 1951 rate. The manufactures newly restricted in November fell more rapidly—in the first quarter of 1952 they were 62% of the 1951 average rate and in the second quarter 49%.

The lag would undoubtedly have been greater, however, had the cuts not been reinforced by the effects of the recession in reducing the pressure for concessions. It might, on the other hand, have been less if the cuts had been administered less liberally, from the point of view both of British traders and of foreign suppliers.

#### V. EFFECT ON STOCKS

We have estimated that imports fell by about £89 million as a result of the new restrictions on private imports, and about £200 million as a result of cuts on imports already under control. We now consider how much of these direct effects of the cuts fell on consumption and how much on stocks.

##### (a) *Newly restricted imports*

We found that the *new* restrictions on private imports were in fact effective only in respect of timber and unrationed foods. Softwood consumption continued to be controlled at the same level by consumption allocations; hence the whole effect of the import restrictions (about £15 million) must have been on stocks. In the case of hardwood, consumption was not directly controlled and there was a fall in stocks during the period of restriction, 1952 and 1953, following a rise in 1951. If we assume that in the absence of the restrictions there would have been no further rise, but also no fall in stocks then we can attribute to the restrictions the fall that actually took place (i.e. about £2 million): this accounts for something over a third of the reduction in hardwood imports due to the restrictions, the rest being assumed to have affected consumption.

No stock figures of unrationed foods are available. It was generally known, however, that there was a large build-up of traders' stocks of canned foods, particularly canned meat, in 1951, and even in the absence of the restrictions there would certainly have been some fall in the rate of stock-building and perhaps even some de-stocking in 1952. Any estimate of how much less stock-building would have fallen in the absence of restrictions must be a pure guess; here we guess it at £10 million, out of the total estimated effect of the restrictions on imports of unrationed food of £66 million.



As regards the miscellaneous manufactures and horticultural items where the effect of import restrictions was estimated at £2.2 million (*see Appendix*), since stocks of these items are not normally large it may be assumed that the impact of the cut was divided equally between stocks and consumption.

Summing up therefore, it is estimated (*see Table VI*) that £28.6 million of the fall of £89 million in imports due to the new restrictions, i.e. about one-third of the total, led to a reduction in stocks, the rest reducing consumption.

(b) *Imports already under control*

Of the rest of the import cuts the main difficulty has been, as we have seen, to identify them. In the three chief items which are identifiable—strategic stock-piling, tobacco and government food imports—the stock element was either 100% or very high.

The whole of the fall in dollar tobacco imports (£25 million), (which could not even affect imports at all until late 1952), was intended to fall on stocks and not consumption.<sup>1</sup> As regards government-purchased food, there were frequent references to low food stocks in 1951, and it seems clear that it was intended in the original programme to build them up.<sup>2</sup> In the event, food stocks rose about £35 million in 1952.<sup>3</sup> In the absence of the cuts, they would certainly have risen much more. It may be assumed that any increase in imports of wheat and of oils and fats would have gone into stock, but that additional imports of cheese, butter and sugar (where there was a fall in total imports as well as in consumption in 1952 and of which rations were particularly low) would have gone to consumption.

<sup>1</sup>Cf. Chancellor's speech in *Hansard* (Commons), 29th January 1952, col. 48.

<sup>2</sup>The fact that, despite the published import cuts, actual government food imports in 1952 were not much below those of 1951 makes it clear that the original programme provided for a substantial rise; since, however, food consumption was expected to stay about constant (*Economic Survey* for 1952, p. 15), it follows that the intended rise must have been destined for building up stocks.

<sup>3</sup>This is based on figures of *recorded* food stocks supplied to Mr. M. Fg. Scott, ("Changes in Stocks of mainly Imported Goods in the United Kingdom," *Bulletin of the Oxford Institute of Statistics*, February 1958). It probably refers only to stocks of government-traded foods. The figures show that recorded food stocks fell £73 million in 1950 and rose only £15.5 million in 1951 (at current prices).

Summing up, one might guess that if the £81 million fall in government non-sterling food imports between 1951 and 1952 had not occurred, both consumption and stocks in 1952 would have been about £40 million higher.<sup>1</sup>

As already explained, no information was given about the size of the original programme of strategic stock-building or of the cut in the programme; all we know is that additions to such stocks were £78 million less in 1952 than in 1951. For present purposes, we may assume that the original programme provided for the same addition to strategic stocks in 1952 as in 1951, though in fact it seems probable that the provision may have been for more.

(c) *Conclusion : total effect of the import restrictions on stocks*

We may conclude that in the absence of the import restrictions, stocks might have risen by some £170 million more than they did (i.e. timber £17 million, unrationed food £10 million, tobacco £25 million, government-purchased food £40 million, strategic stocks £78 million). In the case of the *newly* restricted imports, about one-third of the reduction in imports produced by the cuts affected stocks; while in the case of the imports already under control, about 80% of the cuts affected stocks. Of the products where imports were effectively reduced by the cuts, it was mainly food—sugar, cheese and privately imported unrationed foods—in which a reduction in consumption followed as a result.

The main importance of the distinction between the effect of import cuts on stocks and on consumption is that in the former case there is little reason to expect a substitution—at least in the short run—of other types of investment expenditure, whereas reduced consumption of particular imports is more likely to lead to increased consumption of others, or of home-produced goods. In the first instance,

<sup>1</sup>If food stocks had increased by another £40 million in 1952 the stock depletion of 1950 would have been more than made up (so that our estimate here may be on the high side). On the basis of Mr. Scott's food stock figures, food stocks in 1952 needed to increase (approximately) another £30 million (at 1952 prices) to restore the depletion of 1950. This allows for the small increase in food stocks in 1951, the slightly larger increase which did take place in 1952 and the rise in food prices between 1950 and 1952.

therefore, a reduction in stocks of imports affected by the cuts probably means a reduction in total domestic use of resources and hence an improvement in the balance of payments.

In fact the total use of resources for stock-building fell from the record level of £575 million in 1951 to only £50 million, and the improvement in the balance of payments was of the same order of magnitude. But of the total reduction in stock-building of £525 million, the import cuts can take credit for no more than about one-third. Far more important was the effect of the recession and the general fall in commodity prices in reducing stocks of work in progress and in discouraging speculative holding of stocks.<sup>1</sup>

## VI. EFFECTS ON SAVING AND THE PATTERN OF EXPENDITURE

### (a) *Change in the pattern of expenditure*

We have seen that the direct effect of the import restrictions on consumption was limited to reducing expenditure on certain foods.<sup>2</sup> The next step is to examine the pattern of expenditure change between 1951 and 1952 to see, if possible, what consumers did with the £56 million which they were not permitted to spend on import-controlled food.

Between 1951 and 1952, personal income (after tax) rose by about 10 per cent. About half of this increase went to extra saving which rose dramatically from less than 2 per cent. of personal disposable income in 1951 to nearly 6 per cent. in 1952. The remainder, which went to increase consumption expenditure (some 5 per cent.), was fully balanced by the rise in consumer prices, so that real consumption did not rise at all. Expenditure on food alone rose by nearly £300 million, but this

<sup>1</sup>This is true in general even though there were some sectors where the recession led to involuntary stock increases. This applied particularly to commodities, such as paper and pulp, which were hit comparatively late by the recession. The textile recession had already led to involuntary accumulation of stocks in the latter part of 1951, and these textile stocks fell in 1952. The government itself tended to accumulate involuntarily stocks of certain metals which had been contracted for during the Korean shortage and of which supplies suddenly began to come forward in 1952.

<sup>2</sup>Apart from an estimated £3 million fall (at the most) in hardwood consumption.

was entirely accounted for by increased prices, about one-fifth of which was due to the reduction in subsidies.<sup>1</sup>

Within the food field, there was a marked shift in expenditure from inessential to essential (defined as subsidised) foods.<sup>2</sup> Consumption of essential foods rose between the fourth quarter of 1951 and the fourth quarter of 1952 by 6 per cent., while consumption of inessential foods fell by 3 per cent. The rise in consumption of essential food was the net result of a substantial rise in supplies of fresh meat, bacon and tea, offset only to a small extent by the fall in supplies (partly due to the import cuts) of butter, cheese and sugar. Owing to the reduction in subsidies, the prices of essential foods rose during 1952 much more than those of inessential foods (19 per cent. compared with 6 per cent.)<sup>3</sup>; but this did not lead to a fall in consumption, owing to the existence of substantial overall excess demand.<sup>4</sup> The fall in consumption of inessential foods was due partly to a fall in purchases of those foods which were close substitutes for meat, bacon and tea (fish, coffee) and partly to the import restrictions.

The two most striking features of the 1952 pattern of expenditure were the large and sudden increase in personal saving and the rise of more than 25 per cent. in expenditure on essential foods. The question to be considered here is what the role of import restrictions was in these changes.

As regards the rise in savings, it must be noted that the increase was about ten times as much as the estimated direct effect of the import restrictions on personal consumption. The reasons for this sudden change have never been fully explained,

<sup>1</sup>The food subsidies were reduced in four stages during 1952, starting in March. The aim was to cut the cost of the subsidies from an annual rate of £410 million to a rate of £210 million, a rate which was reached in October 1952. The full effect of the food subsidy reduction was therefore not felt until the last quarter of 1952. The subsidy was reduced on every one of the subsidised foods; that on tea was completely removed in June 1952.

<sup>2</sup>Foods subsidised at the beginning of 1952 were: liquid milk, rationed cheese, rationed carcass meat and bacon, shell eggs (hens'), rationed fats, sugar, tea, bread, flour and potatoes.

<sup>3</sup>*Domestic Food Consumption and Expenditure, 1952.*

<sup>4</sup>The price increase may have reduced purchases by some poorer consumers, but these would have been offset by increased consumption by others.



but they were probably the result of a combination of circumstances : the savings percentage had been kept down for some years after the war by the decumulation of wartime savings and re-stocking by consumers as more goods became available ; stock-building by consumers had been intensified by the Korean war, and the rise in savings in 1952 was probably in large part a reaction following this spending spree. It is however possible that the rise in saving would have been somewhat less in the absence of the import restrictions.<sup>1</sup>

The whole of the money set free by import restrictions, *and more*, was required to pay for greater supplies of essential foods at higher prices. The question is whether consumption of these essential foods would have been any less in the absence of the import cuts. It seems unlikely that a greater availability of tinned meat or fruit or of unrationed cheeses would have led to reduced expenditure on carcase meat or other essential foods, though possibly the demand for some other inessentials might have been affected. The proportion of total personal expenditure which went on food rose from 29% in 1951 to 31% in 1952, but in later years it has risen still further ; it seems quite possible, therefore, that in the absence of the import restrictions more would have been spent on food altogether, at the expense of savings or other forms of expenditure.

There is in fact no satisfactory basis for deciding where the money diverted by the import restrictions actually went. If none of it went on basic foods, for which, despite the substantial rise in both quantity and price, there was still excess demand, there are still two possibilities : either it went to less essential foods or clothing (for which there was no excess demand) or else it went to increased saving. The first alternative could have led to some offsetting increase in uncontrolled imports ; or alternatively, given the economic recession, may have helped to maintain domestic production.

<sup>1</sup>The increase in personal savings in 1952 is discussed at length by H. Lydall in "Personal Saving : Problems and Policies," *Three Banks Review*, September 1956. It may be noted that import restrictions play no part in his explanation.

## VII. ASSESSMENT : IMPORT RESTRICTIONS AND THE ALTERNATIVES IN 1951

In the light of knowledge existing at the time or in that of hindsight, were import restrictions the right policy to pursue in the circumstances of 1951 and 1952? In particular, was it really necessary to impose new restrictions on private imports from O.E.E.C. sources, thus putting into reverse the recently initiated liberalisation programme? Four alternative policies may be considered: "riding the storm" or, in other words, doing nothing; cutting government-traded imports or previously-controlled private imports further; deflating further; and devaluation.

*"Riding the Storm"* : It was realised in 1951 that many elements in the crisis were temporary: import prices and the volume of private imports would have fallen sharply in 1952 even in the absence of restrictions. On the basis of the estimates in Section III (and neglecting possible indirect repercussions), without the new restrictions on private imports the current account surplus in 1952 would have been about £40 million instead of £126 million; without the cuts in government and previously-controlled imports, there would have been a deficit of about £160 million. Looking back then, there would have been no current account deficit in 1952 if there had been no "deliberalisation" of imports from O.E.E.C., and possibly not a very serious one if, in addition, the original programme for government imports, tobacco, etc. had been maintained.

But there might well have been difficulties in the capital account. By November 1951, the reserves were so low that unless some action that looked dramatic was taken, a speculative run might have started at any time; riding the crisis out would have been too great a risk to take at this stage.

*Further cuts in government and controlled imports* : The main arguments against imposing new restrictions on private imports were administrative and political. Any extension of the field of control involves more administrative expense and trouble than does tightening up an existing control. And for Britain to reverse engines on the freeing of imports from Europe

was a major blow to the whole O.E.E.C. liberalisation programme.

The arguments against tightening the existing controls were on the other hand mainly economic. The controlled sector was already controlled fairly tightly and it would have been difficult to find scope for further cuts. Consumption of many of the essential foods imported by the Ministry of Food in 1951 was well below free demand and also below pre-war, and the heavy depletion of stocks in 1950 had not been made up in 1951. Imports of non-ferrous metals could not be reduced because of the requirements of the defence programme and the low level of 1951 stocks. Imports of other materials—timber, paper, pulp and cotton—were in fact reduced in 1952. Finally, private consumer imports from the dollar area, as well as machinery and chemicals, were already so strictly controlled that it would have been difficult to effect further reductions.

There would clearly have been little economic sense in making further cuts in government-imported foods which were on the whole the more essential and cheaper foods (in terms of nutritional value), in order to admit more freely private imports of the less essential and on the whole dearer foods. Even if there is a case for a certain degree of discrimination against imports from hard currency sources, there is no such ground for discriminating against government (or essential) imports as such.<sup>1</sup>

*Deflation* : If the recession in consumer demand and stock-building at the end of 1951 and during 1952 had been supplemented by *further* deliberate deflation the necessary improvement in the balance of payments might have been brought about without any import restrictions. But as it was, unemployment in 1952 increased substantially and reached a level higher than at any time since the war (apart from the 1947 fuel crisis) ; there was also a substantial fall in real national output for the first time since the end of the war. Further deflation in 1952 would only have accentuated these losses. At an earlier stage, however, during the 1951 boom, some form of credit squeeze

<sup>1</sup>The relative cheapness and low volume of government imports were due in part to the Ministry of Food's desire to keep down prices, both for balance of payments reasons and to avoid an undue increase in the cost of living index in the face of the reduced subsidy ceiling.

might have been an entirely appropriate measure, particularly if it had succeeded in damping down the abnormal stock-building during that year. But this is largely a recommendation of hindsight, since at the time the extent of the stock-building boom was not clearly recognised.

*Devaluation* : In 1951 there was still some doubt about the wisdom of the 1949 devaluation, and early in the year the idea of a revaluation was actually mooted. It is true that in the spring of 1952 convertibility and a flexible exchange rate appear to have been seriously considered, but it is doubtful whether the advocates appreciated the full implications of these proposals. Devaluation was unsuited for a crisis with so many temporary elements. It would probably have reduced imports of much the same foods and manufactures from Europe as were hit by the import restrictions, but would have had little effect on imports of raw materials or on exports. The "hard" exports were in inelastic supply owing to the defence programme and foreign demand for the "soft" exports had temporarily slumped beyond the power of any reasonable price reduction to revive.

### *Conclusion.*

Had there been greater foresight it might have been better to curb the boom by deflation in 1951 ; had there been larger reserves, it might have been better to "ride out" the crisis in 1952 ; but with the given amount of both foresight and reserves, the re-imposition of import restrictions was probably the most appropriate policy in the circumstances. The main value of the import restrictions in 1952 was probably their "demonstration effect" in reassuring speculators. But on the current account, too, they had some effect, though a modest one and somewhat delayed.

If, however, we want to draw some conclusions for the future from this experience we must bear in mind certain special features of the 1952 situation which were on the whole favourable to the operation of the import cuts.

First, the fact that the 1951/2 restrictions were associated with a recession undoubtedly increased the speed and the extent of the fall in imports, and weakened both the pressure



for concessions and any offsetting indirect repercussions on exports or uncontrolled imports. As the experience of Australia in 1955 demonstrated, it is a very different matter to impose import restrictions against an *inflationary* trend of demand.

The second favourable factor was the large extent of government trading in 1951: the government was then responsible for 37 per cent. of total imports as compared with a single product, jute piece-goods, to-day. A substantial part of the cuts in 1951 and 1952 consisted of cuts of imports bought on government account. To force a reduction to-day in many of these items would involve disrupting commodity markets and setting up a considerably larger control machinery than was needed in 1952.

These factors relate to the direct effect of import control on imports. In addition, there is the question of possible repercussions on exports. Despite the serious reverse to O.E.E.C. liberalisation constituted by the British restrictions in 1952, they were on the whole accepted by the other member countries as justified and there was no movement to retaliate. This was in part a measure of the seriousness of Britain's balance of payments plight and in particular of the sterling area's deficit in E.P.U. at the time. It is possible that repetition of a policy of deliberalisation in the case of a less severe balance of payments crisis (or of one with a less marked regional impact on E.P.U.) might not be received in the same spirit of sympathetic co-operation.

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## APPENDIX

This Appendix presents the details on which the estimates given in Table VI are based.

(1) **Items estimated to have been unaffected by the cuts.**

(a) *Unfilled quotas :*

One important reason for assuming that the cuts were ineffective was evidence that import quotas were not taken up. There is no direct evidence on this, the nearest approximation being a comparison between the published size of quotas and the amount of imports actually arriving in the nearest relevant period. Details are shown in Table VII covering all items where imports were below the published quota values.

**TABLE VII. UNFILLED QUOTAS**

Quotas compared with Actual Imports from the Relaxation Area in 1952

£000 c.i.f.

	1st half 1952			2nd half 1952		
	No. of Quota Items	Total Quota Values	Actual Imports	No. of Quota Items	Total Quota Values	Actual Imports
<b>Items restricted November 1951</b>						
<i>Items where imports were below published quotas in the period</i>						
Fondant <sup>1</sup> ... ..	—	—	—	1	750	721
Fruit juice <sup>2</sup> ... ..	1	950	855	—	—	—
"Other" canned meat <sup>3</sup> and poultry <sup>4</sup> ... ..	—	—	—	1	7,000	5,845
Essential natural oils ... ..	1	2,000	1,840	1	1,500	1,014
Canned tomato juice and puree <sup>4</sup> ... ..	—	—	—	1	1,750 <sup>5</sup>	1,644 <sup>5</sup>
Canned tomatoes <sup>4</sup> ... ..	—	—	—	1	2,900 <sup>5</sup>	2,482 <sup>5</sup>
Other foods ... ..	4	621	538	9	921	407
Carpets ... ..	2	1,475	528	2	870	379
Paper manufactures ... ..	1	800	721	1	530	279
Other manufactures ... ..	5	1,015	839	6	490	378
<b>Total ... ..</b>	<b>14</b>	<b>6,861</b>	<b>5,321</b>	<b>23</b>	<b>16,711<sup>6</sup></b>	<b>13,149<sup>6</sup></b>
<i>Items where imports equalled or exceeded published quotas ... ..</i>	46	30,641	48,576	37	13,083 <sup>7</sup>	20,995 <sup>7</sup>
<i>Items where no comparable import figures available ... ..</i>	7	1,101	—	9	1,961	—
<b>All items subject to quota ... ..</b>	<b>67</b>	<b>38,603</b>	<b>—</b>	<b>69</b>	<b>31,755<sup>8</sup></b>	<b>—</b>
<b>Items restricted March 1952</b>						
<i>Items where imports were below published quotas in the period</i>						
Textile yarns ... ..	—	—	—	1	1,450	726
Flax line and tow yarns ... ..	—	—	—	1	725	64
Matches ... ..	—	—	—	1	685	422
Other manufactures and materials ... ..	—	—	—	12	1,567	848
Cheese ... ..	—	—	—	1	4,500	4,388
Sausage bladders and casings ... ..	—	—	—	1	1,600	810
Other foods ... ..	—	—	—	2	480	286
<b>Total ... ..</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>19</b>	<b>11,007</b>	<b>7,544</b>
<i>Items where imports equalled or exceeded published quotas ... ..</i>	—	—	—	7	11,371	16,732
<i>Items where no comparable import figures available ... ..</i>	—	—	—	10	734	—
<b>All items subject to quota ... ..</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>36</b>	<b>23,112</b>	<b>—</b>
<b>Items where quotas assumed unfilled<sup>9</sup></b>						
Items restricted in November ... ..	14	6,861	5,321	19 <sup>10</sup>	4,311	2,457
Items restricted in March ... ..	—	—	—	18 <sup>11</sup>	6,507	3,156
<b>Total as percentage of all items subject to quotas ... ..</b>	<b>21</b>	<b>18</b>	<b>10</b>	<b>35</b>	<b>20</b>	<b>9</b>

[For Footnotes see next page]

A shortfall of imports compared with the quotas is, however, not conclusive evidence that the quotas were not taken up, because (a) the quota periods and import periods are not identical and (b) certain imports of the restricted items shown were admitted outside the quota. It may be assumed in general that these discrepancies tend to cancel out. The quota periods, although officially referred to as relating to the first and second half of 1952, in fact covered imports in the first case from 8th November 1951 to 30th June 1952 and in the second from 12th March 1952 to 31st December 1952 ; moreover, imports in excess of the quota in one period could be counted against, and thus reduce the effective size of, the quota in the following period. On the other hand it is probable that some imports in earlier months of the quota period were admitted outside the quota on the grounds that they were *en route* or under firm contract at the time of the announcement of the restrictions. The extent of such extra-quota imports is not known.

It is assumed here that quotas were in fact unfilled in all cases where they exceeded imports, except for the following cases in the second half of 1952 : (i) "other" canned meat, (ii) cheese and (iii) fondant. In each case the quota in the first half year was exceeded (in the case of fondant there was no published quota, but imports were high and probably exceeded the unpublished quota) and it is likely that the excess was counted against the second half year's quota. A similar situation existed as regards tomato juice and canned tomatoes, where imports exceeded the quotas in the first half of 1952, and for the second half there was no separate quota, only a twelve-month quota running to the middle of 1953. Imports for the twelve months ending June 1953 were considerably below the twelve-month quota (£4,126,000 compared with £4,650,000), but as in the case of "other" canned meat, fondant and cheese, this was probably made up by the setting off of excess imports in the first half of 1952 against the 1952/3 quota. The number and percentage of quotas estimated to have been unfilled, adjusted for the omission of canned meat, cheese, fondant, and tomato juice and canned tomatoes, are shown in the last part of Table VII.

(b) *Other signs of excess supply :*

There are certain other cases where independent evidence of conditions of excess supply suggests that the import quotas had no effect, although the actual quotas were not published or, if they were, appeared to have been exceeded for some special reason.

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*Footnotes to Table VII opposite.]*

<sup>1</sup>No quota published for 1st half 1952.

<sup>2</sup>Quota for 2nd half of 1952 extended to 30th June 1953 was exceeded by imports for the same period.

<sup>3</sup>i.e. other than canned ham and bacon.

<sup>4</sup>Quota for 1st half of 1952 exceeded.

<sup>5</sup>Quota for 2nd half of 1952 extended to 30th June 1953. Imports shown for the same period.

<sup>6</sup>Including £4,650,000 of quotas extending to 30th June 1953, and imports for the same period (£1,252,000 for 1st half 1953).

<sup>7</sup>Including £2,750,000 of quotas extending to 30th June 1953, and imports for the same period (£2,146,000 for 1st half 1953).

<sup>8</sup>Including £7.4 million of quotas extending to 30th June 1953 (*see footnotes 6 and 7 above*).

<sup>9</sup>i.e. where the quota was estimated to exceed free demand in the period.

<sup>10</sup>i.e. all items where imports were below the quota, except "other" canned meat, fondant, tomato juice and canned tomatoes where the shortfall is assumed to have been due to excess imports in the first half being offset against the quota for the second half.

<sup>11</sup>i.e. all items where imports were below the quota except cheese, where it is assumed that some quota imports arrived in the second quarter.

(i) *Paper and board* production and consumption fell in 1952, while stocks of paper as well as of wood-pulp (the main paper-making material) rose. Production was running well below capacity and 1952 was the first year since the war when supplies of paper and board were in excess of demand. The price of imported wood-pulp fell sharply during the year, and all controls on the use of wood-pulp were removed.<sup>1</sup>

No precise quota was published for paper, but in December 1951, it was stated that the tonnage of paper and board to be licensed from all sources in the first half of 1952 would be about 50% of the tonnage of the first half of 1951, that certain special types would not be licensed at all, while certain others would get licences to a tonnage less than 50% of the imports in the first half of 1951.<sup>2</sup>

In fact, imports in the first half of 1952 were a little more than half of those in the first half of 1951, probably owing to the delay in making licensing arrangements, but there was a sharp fall in the second half of 1952 so that, for the year as a whole, imports were at less than half the 1951 rate. The combination of the sharp fall in imports with the involuntary increase in stocks held by producers suggests that demand and not the import cut was the effective factor limiting imports.

No import quota was announced for wood-pulp and other paper-making materials. In view, however, of the very sharp fall in paper production and the fact that stocks of wood-pulp and paper-making materials actually rose, it seems clear that import restrictions were not effective here either.

(ii) Import restrictions on *plywood* were linked with the problem of disposing of unwanted government stocks.

Demand fell sharply in 1952 owing to the recession in the furniture industry,<sup>3</sup> but imports fell much less owing to existing contracts, principally with Finland. The continued arrival of these unwanted imports created a situation of excess supply. Here, too, there was a large involuntary stock accumulation, but in this case in the hands of the government. Import licences were granted only on the condition that £2 worth of plywood was bought from the government stock for every £1 imported. The main effect of this restriction was to enable the government to dispose of its stock on more favourable terms than would otherwise have been possible. If imports had not been restricted the stock would have had to be disposed of at lower prices, to the loss of the Exchequer and the gain of consumers and traders, but it seems unlikely that private imports would have been any higher.

(iii) Although imports from the relaxation area of *textile piece-goods*, *cotton grey cloth* and "*textile manufactures (specified)*" fell substantially in 1952 they were nevertheless well above the global quotas for the second half of that year.<sup>4</sup> This was almost certainly due to government imports of textiles for military purposes, orders for which had been placed early in 1951 when the United Kingdom was in substantial surplus in E.P.U. When the United Kingdom's E.P.U. position deteriorated no more orders were placed, but, although no precise figures of these government imports are available, they probably explain both the excess of imports over the quotas and the fact that imports in 1952 were above those of 1953, despite the recovery in the

<sup>1</sup>Cf. "Paper Production and Supplies in 1952," *Board of Trade Journal*, 25th April 1953.

<sup>2</sup>*Board of Trade Journal*, 22nd December 1951, p. 1280.

<sup>3</sup>Between the 2nd quarter of 1951 and the 3rd quarter of 1952, the index of wooden furniture production fell by 30%.

<sup>4</sup>Imports of textile yarns and of "flax line and tow yarns" were below the quotas and are included in Table VII above. In the case of another small textile item, "elastic and narrow fabrics, etc." imports were about equal to the quota.



textile market in 1953 and the removal of restrictions on textile piece-goods and cotton grey cloth in March 1953.

Private imports from relaxation sources were probably below the global quotas. This may be deduced from the fact that the quotas were said to have allowed private importers about 50% of their 1951 imports,<sup>1</sup> whereas imports of textile yarns and of textiles from the sterling area fell by much more.

An upper limit would place the effect of the restrictions on textiles at £5 million ; this assumes that (a) government imports of textiles from relaxation sources in the second half of 1952 were £4 million and (b) that the free demand for private textile imports in 1952-3 was equal to actual imports in the year ending 1954, a period free of restrictions.

(iv) *Apparel* imports from the relaxation area in 1952 were above those in 1951 and far in excess of the quota ; they fell sharply again in 1953. Some part of the high value of imports might be explained by the high raw wool and cotton prices in 1951, but in the main the excess over the quota was probably due, as in the case of textiles, to government imports.

(v) There were two *other items* where the exact quota was not published, but from the general indications of licensing intentions it is clear that imports were well below the intended rate. The quantity of *veneers* to be licensed was stated to be equal to the import rate in the year ended June 1951, whereas actual imports in 1952 were about 75 per cent. of this rate. Similarly *dressed leather* imports were to be allowed in at the same rate (by *value*, this time) as in the first half of 1951, whereas actual 1952 imports were far lower.<sup>2</sup>

## **(2) Items where restrictions are estimated to have reduced imports.**

### **(a) Food :**

(i) Imports of *canned ham and bacon* from Europe rose sharply in 1951 and fell again in 1952 and 1953. There are several reasons why some of this fall would have occurred in the absence of the import restrictions. In the first place, demand in 1951 had been boosted by exceptionally low imports of carcase meat. In 1952, though imports of beef fell further, this was outweighed by a large increase in supplies of mutton and lamb. Moreover, in 1951 there was known to have been heavy speculative stock-piling of canned meat by traders and consumers. Finally, there was a substantial rise in canned meat imports from Australia and New Zealand in 1952. The difficulty here, however, is to decide whether this was a *result* of the restrictions on relaxation imports or whether it would have happened anyway and helped to *reduce* the unrestricted demand for relaxation imports.

There was some tendency for more meat to be canned in Australia as a result of the 1951/2 drought, for after a bad season more is usually canned and less exported as carcase meat. But the Australian Meat Board, at least, regarded the increased export of canned meat as due to a "tremendous upsurge of demand . . . related closely to restrictions placed by the United Kingdom on imports from other destinations."<sup>3</sup>

Taking these various factors into account we assume that, in the absence of the restrictions, imports of canned ham and bacon from relaxation sources in 1952 would have been £20 million (compared with £29.6 million in 1951), with a margin of error of + £2 million and -£10 million. This placed the effect of the import restrictions on canned ham and bacon imports in 1952 at £14 million (+ £2 or -£10 million).

<sup>1</sup>Information supplied by the U.K. Government, G.A.T.T. *International Trade*, 1952 (Geneva, June 1953), p. 68.

<sup>2</sup>*Board of Trade Journal*, 24th November 1951, p. 1070.

<sup>3</sup>*18th Annual Report* of the Australian Meat Board, October 1953, p. 13.

(ii) The fall in imports of *other canned meat* in 1952 was much less than that of canned ham and bacon. Even assuming that free demand had remained at the 1951 level (allowing for some price rise this would mean a slight reduction in volume), the effect of the import restrictions would have been only £3.7 million. This is probably an upper limit. It is possible that free demand would have been no higher than actual imports (given the very large increase in supplies from Australia) so that the import restrictions had no effect.<sup>1</sup>

(iii) Owing to low supplies of government-imported rationed cheese, imports of the privately traded "frivolous" cheeses from Western Europe were increasing up to the time of the March 1952 restrictions. There was a marked cheese shortage in 1952, although imports in the second half of the year were a little below the published quota. It is extremely unlikely that the quota was in fact unfilled, the explanation probably being that some imports came in under the quota in the second quarter.

We have assumed that unrestricted imports in the last nine months of 1952 would have been at the same rate as in the first quarter. This probably yields an upper limit to the effect of the restrictions of £2.5 million, with a margin of error of -£0.8 million (assuming free 1952 imports equal to actual 1951 imports).

(iv) Other foods : This group includes all foods restricted in November 1951, other than (a) canned meat and (b) those dealt with in Table VII for which the quotas were estimated to have been genuinely unfilled.<sup>2</sup>

Imports of this group in 1951 were abnormally swollen by traders' stockpiling of canned and bottled foods and by the low supply of essential foods. As explained in the text we have assumed that the effect of any de-stocking in 1952 together with the improved supply of basic foods was balanced, as regards its effect on the demand for this group of inessential foods, by the rise in real disposable income. In other words, we have assumed that in the absence of the restrictions imports would have been the same as in 1951. This means the restrictions are estimated to have reduced imports by £46 million (of which £14.6 million would refer to sugar products and substitutes). Imports of those items in the group which were freed in March 1953, rose sharply in 1953-4 relative to 1952-3 confirming the impression that in this field the restrictions were effective. But the margin of error in this estimate must also be quite substantial. If instead of assuming free demand to have remained the same as in 1951 we had assumed a rise of 10 per cent., the effect of the restrictions would have been £11 million more ; if we assumed demand to have fallen by 20 per cent. the effect would have been £18 million less.

(b) Timber :

(i) Softwood imports from the dollar area and Eastern Europe were the responsibility of the government (Timber Control) during 1951, while purchases from other sources (principally Scandinavian) were left to private

<sup>1</sup>Imports of these "other" canned meats from relaxation sources in the second half of 1952 were below the published global quota (*as shown in Table VII*). At that stage there was possibly no longer any excess demand ; on the other hand it is more likely that there was some offsetting against the first-half 1952 quotas, which had been exceeded.

<sup>2</sup>This means that fondant, tomato juice and canned tomatoes, where the quotas exceeded imports in the second half of 1952 but were judged in fact to have been fully taken up, are included here. Total imports (from relaxation sources) of the group came to £90 million in 1951, the other main items being : fresh fruit (£15.9 million), canned fruit (£11.8 million), edible nuts (£10.2 million), confectionery, chocolate couverture, etc. (£8.6 million), sugar fat mixtures (£8.4 million) and biscuits (£4.7 million).

trade. In September 1951, it was decided that in 1952 all softwood imports should revert to private trade. Later, as part of the November 1951 import cuts, private imports from all non-sterling sources were put on global quota ; this meant that imports from non-dollar sources such as Scandinavia which had been on Open Individual Licences in 1951 were once more subjected to restriction. It should be noted that only very small quantities of softwood come from the sterling area and these remained uncontrolled.<sup>1</sup>

At first the global quota was stated to be 600,000 standards, but this was later amended to 450,000 standards for the year.<sup>2</sup> This quota applied only to private imports. The Timber Control in the meantime continued to bring in softwood from the dollar area and the Soviet Union which had been contracted for in 1951. No precise figures are available of government imports in 1952, but since total imports were 1,022,000 standards, government imports in this year must have been considerably larger than those of private traders.

The question is whether, in the absence of the restrictions, private imports would have been greater than the 450,000 standards allowed under the global quota : in other words, taking the dollar and Soviet supplies imported by the Timber Control as given, would total imports have been more than 1,022,000 standards? Consumption was at this time still directly controlled—at 1,056,000 standards in 1952—and can be regarded as fixed. The question therefore turns on what private traders would have wanted to do about stocks.

Stocks actually fell by 108,000 standards in 1952. The fact that when import controls were removed in 1953 they rose by 132,000 standards suggests that the de-stocking in 1952 may have been involuntary. If we assume that traders would have liked to achieve the end-1953 stock level at the end of 1952, this would imply that the restrictions reduced imports by some 130,000 standards ; this figure might be increased to, say, 150,000 standards to allow for some increase in consumption (either through an increase in unlicensed consumption associated with the higher stocks or through an easing of the consumption control).<sup>3</sup>

The announcement of the quota and the reduction in British purchases helped to reduce Scandinavian prices, though the reduced demand would have led to some fall in price anyway.<sup>4</sup> We assume that in the absence of the restrictions the average c.i.f. value of private imports would have been £78 per standard instead of the actual level of £70 ; this compares with prices a little earlier of over £90.<sup>5</sup>

<sup>1</sup>*Board of Trade Journal*, 22nd December 1951, p. 1279.

<sup>2</sup>*Times Review of Industry*, April 1952.

<sup>3</sup>This estimate is roughly confirmed by the fact that when, at the end of 1951, it was at first stated that the global quota would be 600,000 standards, this was regarded by the trade as roughly what they would have bought anyway. When the quota was reduced to 450,000 standards, there was considerable trade disappointment and signs of a frustrated desire to buy more. (Cf. *Times Review of Industry*, December 1951—September 1952).

<sup>4</sup>Britain accounted for 60% of total O.E.E.C. softwood imports and thus her demand had a preponderant effect on price. Demand from the second main importer, Germany, actually increased in 1952. (Cf. O.E.E.C. *Timber Industry in Europe*, Paris, 1954).

<sup>5</sup>£70 was the average value of imports from sources other than North America and the Soviet Union in the second half of 1952, the period when most of the 450,000 standards under the global quota probably came in. The average value of arrivals in the first half of 1952, based mainly on 1951 purchases, was £91.



Our estimates therefore yield a saving due to the import restrictions of £15.3 million—£11.7 million saved due to reduced quantity (150,000 at £78) and £3.6 million due to reduced price (£8 on 450,000). If we had assumed a price saving of only £4 a standard and a reduction in quantity of only 50,000 the saving would have been £5.5 million; at the other extreme a price reduction of as much as £12 and a fall in quantity of 250,000 would give a saving of £25.9 million.

(ii) *Hardwood imports* were restricted in March 1952, but no quota was published. Between 1951 and 1952 there was a 39% fall in total hardwood imports, made up of a 36% fall from the sterling area (supplying about half the total), a 25% rise from the dollar area and Japan (supplying only 10% of the total in 1951) and a fall of 62% from the remaining sources, which were those to which the restrictions applied. The question is to what extent this 62% fall was due to the import restrictions, and whether the restrictions had any compensating effect on imports from other sources.

The fact that imports from the sterling area fell by 36% is some indication of the force of the recession in reducing demand, so long as this is not assumed to contain any spill-over from unsatisfied demand in Europe. The increased imports from the dollar area and Japan were mainly speciality hardwoods not substitutable for European supplies. But apart from the recession there were supply limitations. The French—the main O.E.E.C. suppliers—introduced export restrictions in 1951 which might have reduced imports from that source in any case.<sup>1</sup> Although there had not been any large stock build-up in 1951, hardwood stocks in the hands of merchants and the government fell in 1952 and 1953, probably as a result of the restrictions.<sup>2</sup>

We assume that, in the absence of the restrictions, imports from the newly restricted sources would have fallen by no more than the 36% by which imports from the sterling area fell. On the other hand it is possible that the restrictions had no effect on imports, since it is hard to believe that controls imposed only in March would have aimed at such a substantial import reduction during 1952, and since there was little sign of unsatisfied demand. This sets the lower limit to the effect of the restrictions, our main estimate giving also the upper limit.

Britain is not such an important buyer in the European market of hardwood as of softwood and in this case it seems unnecessary to assume that the restrictions reduced prices. In fact prices rose somewhat in 1952. Taking the 1952 average value of imports from newly restricted sources (£0.77 c.i.f. per c. ft.), we get a restrictive effect of £5 million (lower limit, zero).

(c) *Other items probably affected by the restrictions :*

The restrictions may have had some effect on (i) certain manufactures restricted in November 1951 (i.e. other than apparel and those included in Table VII as having unfilled quotas), (ii) horticultural items restricted in March 1952 and (iii) certain materials and manufactures restricted in March 1952. No global quotas were published for (ii) and (iii). Imports of these three groups totalled £28 million in 1951 (5% of the 1951 import value of all the items affected) and fell by £11 million in 1952.

<sup>1</sup>Cf. *Financial Times* Survey, "The Timber Trade," 19th January 1953.

<sup>2</sup>Total imports never recovered to the 1950 and the 1951 levels even when the restrictions were lifted in November 1953; but this was mainly due to the ending of softwood consumption licensing in 1953 and cannot be taken as a guide to demand in 1952 when softwood consumption was still controlled.



There is not much basis for estimating the degree to which this fall was due to the restrictions. Demand in all cases was falling to some extent as a result of the recession. Some indication is given by what happened when the restrictions were lifted, but this indication too is blurred by the fact that the lifting of the restrictions in many cases coincided with the lifting of the recession. Some of the items in the first and third groups were freed in March 1953 and in each case imports in the year ending June 1954 were higher than in 1952-3. Horticultural seeds were decontrolled only in October 1954, while bulbs are still subject to control.

We assume that of the 1952 fall in imports of £3 million in the first group, 10% (£0.3 million) may be attributed to the restrictions. The second and third groups were restricted only in March, so the effect in 1952 was limited mainly to the second half—£0.7 million and £1.2 million respectively, the latter figure assuming that free 1952 second-half imports would have been approximately at the actual 1954 rate. The total effect for all three groups comes to £2.2 million (margin of error  $\pm$  £2 million).

# The T.U.C. Jurisdictional Dispute Settlement, 1924-1957<sup>1</sup>

Inter-union disputes upset relations in industry, create bitterness among union members, and waste the unions' funds and energies. This paper seeks to examine the principles employed by the Trades Union Congress from 1924 to 1957 to settle one type of inter-union dispute,<sup>2</sup> the jurisdictional conflict, and to analyse the effects of awards on the right of workers to join the union of their choice.<sup>3</sup>

The phrase, "right of workers to join the union of their choice", does not refer to a legal right; on this issue, the law is passive and intervenes only when a union infringes a member's right by action not in accordance with its rules.<sup>4</sup> The phrase refers, instead, to a principle and to a customary right. Historically, people have generally been able to join the union of their choice; and, to-day, they often claim this as their privilege, i.e., they assert the principle that a worker *should* have the right to join the union of his choice. But neither the principle nor the custom is absolute.<sup>5</sup> Individuals may assert their traditional privilege of freedom of choice only where more than one union serves them, that is, where there exists the possibility of jurisdictional conflict.

This paper's concern is with the extent to which the T.U.C.'s principles for settling jurisdictional disputes have whittled away the right of workers to join the union of their

<sup>1</sup>I wish to thank Prof. H. G. Johnson for his helpful suggestions.

<sup>2</sup>Jurisdictional disputes are conflicts which arise when rival unions claim the right to organise the same group of workers. This paper does not deal with the other main type of inter-union dispute, the demarcational conflict, which arises when rival unions claim the same jobs for their members.

<sup>3</sup>The above principle should not be confused with the non-union concept that a worker should have the right to be or not to be a union member.

<sup>4</sup>See Cyril Grunfeld, *Trade Unions and the Individual*, Fabian Research Series: 1957.

<sup>5</sup>Since every union does not cater for every type of worker, the individual's area of choice necessarily is restricted by the number of unions which do serve his employment. Thus, the reduction in the number of unions through amalgamations has narrowed the possibility of choice. Where only one union caters for a given industry or trade, there is no possibility of choice or of jurisdictional conflict.

choice. Part I describes the machinery developed by the T.U.C. to solve inter-union conflicts. Part II examines the T.U.C.'s principles regarding transfers and analyses why the principle of freedom of choice tended to diminish in importance between 1927 and 1929. Parts III to V analyse the changes made in the T.U.C.'s interpretation of various principles which have been codified in the Bridlington resolutions of 1939. Part VI explains why these principles have changed in a direction which has undermined the principle of freedom of choice and why no post-war award has permitted members to transfer from one union to another. The conclusion, part VII, notes some current problems of union organisation which have arisen because of the inability of workers to exercise their right to join the union of their choice.

### I.

When the T.U.C.'s General Council was given constitutional status in 1920, it was instructed by Congress to "endeavour to adjust disputes and differences between affiliated Unions."<sup>1</sup> One of its first acts was to establish a panel for disputes inquiries from which Council members could be drawn to participate in a Disputes Committee. From the very beginning, the General Council's policy has been to attempt first to conciliate the dispute, to persuade and influence the disputants, and to bring the parties together so that they might settle their own differences. Where this fails, the General Council may arbitrate on the dispute by summoning the representatives of the contending unions to appear before the Disputes Committee, requiring the submission of evidence, and holding a hearing. The awards made by the Disputes Committee have become binding, since 1926, in so far as failure to abide by them may lead to the suspension of the disobedient union, and its subsequent expulsion from Congress.<sup>2</sup>

Over a period of years, a body of "parliamentary" and "case" law has been developed: the former by resolutions

<sup>1</sup>The General Council's authorisation to carry out these instructions may be found in T.U.C. Standing Orders 11, 12, and 13.

<sup>2</sup>Although the General Council has no formal power of compulsion other than the power of suspension, it has a considerable moral authority; in practice, very few unions have resigned or risked expulsion to avoid complying with an award.

adopted at various Congresses ; the latter by precedent-setting awards. Resolutions, submitted at Hull (1924) and Bridlington (1939), outline an ethical code of conduct to guide "good trade union practices." The code requires that no member of one union shall be accepted into another union without consultation between the two unions concerned. It forbids the acceptance of members from another union if these members are under discipline, in arrears, or involved in a trade dispute. And lastly, no union should organise any grades of workers in an establishment in which another union has enrolled the majority of workers employed in those grades and negotiates the wages and conditions, unless by prior arrangement with that union. Where the code is observed and where there are no "legitimate" objections, workers may freely transfer from one union to another ; but, as will be shown, the Disputes Committee's interpretations of this code and its concept of what constitutes a legitimate objection have altered radically in the past thirty years.

The General Council has also fostered numerous working agreements between unions which set up machinery for composing joint difficulties, recognising each other's cards, and deciding conditions for membership transfers. These agreements frequently determine, in addition, a union's sphere of influence by dividing a given territory, industry, or even plant into sections and by allocating them to the various parties concerned as permissible organising areas. The majority of jurisdictional problems is resolved by this independent machinery, for only when unions fail to settle their own differences do they take them to the General Council. Unfortunately, unions usually do not publish the terms of these negotiated decisions, but this is not an overwhelming handicap to the analysis of the effect of jurisdictional settlements on the worker's freedom to choose his union : on the one hand, the Disputes Committee's awards tend to follow the customary practices as developed by unions in their private inter-union agreements ; on the other hand, awards tend to bring into line those unions which deviate from the accepted practices. As customs amongst unions change, awards tend to change. Therefore, by analysing the awards made by the Disputes Committee, we can determine also the



*general tendency* of these negotiated decisions, whilst recognising that exceptions will exist wherever unions do not conform to the prevailing practices.

## II.

One of the first principles adopted by the General Council in determining awards was to refuse transfers of members from one union to another in cases where the members had been "poached." "Poaching," as the term was used in early jurisdictional cases,<sup>1</sup> means the act of recruiting members by *influencing* them to leave another union. Induced transfers due to "poaching" may be distinguished from spontaneous transfers due to the voluntary decisions of members to transfer to another union, decisions in which the initiative to transfer comes from the members themselves. In all but one of the cases adjudicated between 1924 and 1927,<sup>2</sup> spontaneous or voluntary transfers were freely permitted in spite of a union's objections to relinquishing its members, provided that the ethical code was observed. The policy of distinguishing between transfers induced by "poaching" and voluntary transfers applied equally to an individual transfer and to those involving groups of members.

A test case of this policy raised the question, "May a group of workers secede from T.U.C. Union 'A' to join T.U.C. Union 'B'?" The difficulties in answering this question hinge on the words, "group" and "secede." An individual transfer usually is no great loss or great gain to a union; some shift out, others move in, and the losses and gains in membership more or less balance. But when a substantial number of members transfer, it may mean the loss or weakening of a branch, of revenue, of strength in a particular plant or district, and of negotiating rights. Further, when a group of workers secedes from a union,

<sup>1</sup>In recent years, the word, "poaching," has been used to mean any "illegitimate" transfer, i.e., any transfer which violates the ethical code as interpreted by the Disputes Committee. Since this paper attempts to analyse the changes made in awards, this definition can serve only to obscure the issues, and hence, will not be used here.

<sup>2</sup>The exception was a case where members desired to join another union because its dues were 6d. per month less than those in their own union. "Miners' Federation of Great Britain v. General Federation of Firemen's Examiners' and Deputies Association," T.U.C., *Annual Report*: 1924.

it is regarded by that union as a disloyal act, as a breach of solidarity. Nevertheless, the Disputes Committee decided that such transfers may be permitted, if the secession represented a voluntary act on the part of the workers concerned and if no attempt was made by Union 'B' to "poach" them.<sup>1</sup> When a complainant union protested against this decision on the assumption that it would justify every breakaway in the labour movement, the Disputes Committee upheld its award with the statement that it—

"could see no justification whatever for departing from the decision already come to, particularly in view of the fact that it was agreed at the hearing of the representatives of the Quarryworkers' Union that the Workers' Union official concerned in the case had not used any improper influence to induce the men to transfer to the Workers' Union. Furthermore, the secession of members from the Quarryworkers' Union to the Workers' Union was clearly admitted to have been a voluntary act on the part of the men concerned, all of whom were clear on the books at the time of the transfer.

*The Committee regarded the decision as the only possible one in the light of the evidence*, and did not think any good purpose would be served by re-opening the case. This view was endorsed by the General Council."<sup>2</sup>

When asked to rule on a related principle, namely, whether a group of workers who secede from T.U.C. Union 'A' and who then set up a separate breakaway union<sup>3</sup> outside the T.U.C. could become affiliated to Congress by later merging with T.U.C. Union 'B', the General Council decided that "no general ruling on the principle could be given, but that each case must be decided on its merits."<sup>4</sup>

This flexible policy was altered between 1927 and 1929 due to a series of influences at this time which led to the outlawing

<sup>1</sup>"National Amalgamated Union of Quarryworkers and Settmakers v. Workers' Union," T.U.C., *Annual Report* : 1925.

<sup>2</sup>*Loc. cit.* (italics added).

<sup>3</sup>A breakaway union is a union *formed* as a result of a secession of members from another union.

<sup>4</sup>"National Union of Distributive and Allied Workers v. National Federation of Insurance Workers," *op. cit.* : 1924.

of all types of secessions. Firstly, the Tobacco Workers' Union, which had poached several branches from the National Union of Distributive and Allied Workers,<sup>1</sup> resigned from Congress to escape an award requiring the return of these members. In retaliation, the N.U.D.A.W. introduced the following resolution which was adopted by Congress in 1927 : <sup>2</sup>

"This Congress pledges itself to discourage in every possible way the formation of new Trade Unions, and directs the General Council to refuse to accept the affiliation of any trade union which is composed of members who have broken away from an existing union affiliated to Congress." <sup>3</sup>

Then the T.U.C., having called the General Strike largely in defence of the miners, discovered after the failure of the Strike that the Miners' Industrial (Non-Political) Union had broken away from and was disrupting the activities of the Miners' Federation of Great Britain. Subsequently, in 1928, the T.U.C. expelled the National Union of Seamen for failing to obey an award which ordered it to cease aiding this breakaway union.<sup>4</sup> For many years previously, the T.U.C. had been discussing ways of decreasing the number of unions through amalgamations ; and thus, it opposed breakaway unions not only because their formation represented a breach of solidarity but also because they increased the number of competing unions. In this case, strong emotions were evoked because the Miners' Industrial Union was regarded as a breakaway union which was being used by some employers to weaken the Miners' Federation of Great Britain.

Simultaneously with these events, the T.U.C. and some eminent employers were holding negotiations (the so-called Mond-Turner talks) whose aim was to find some means of developing labour-management co-operation, industrial peace,

<sup>1</sup>"National Union of Distributive and Allied Workers v. Tobacco Workers' Union," *ibid* : 1926.

<sup>2</sup>The Tobacco Workers' Union was re-admitted to the T.U.C. in 1942.

<sup>3</sup>*Op. cit.* : 1927.

<sup>4</sup>*Ibid* : 1928. The National Union of Seamen was re-admitted to the T.U.C. in 1930 after the death of Havelock Wilson, N.U.S. General Secretary, who had been largely responsible for the policy of supporting the breakaway union.

and prosperity through rationalisation. Unofficial rank-and-file groups, led mainly by the Communist-sponsored National Minority Movement, opposed these aims and the right-wing leadership of the T.U.C. In its turn, the General Council, largely under the growing influence of Citrine and Bevin, grew wary and fearful of independent, unofficial activities among the rank and file. This fear was intensified by the fact that the Minority Movement was affiliated to the Red International of Labour Unions which, at this time, was creating dual unionism<sup>1</sup> in country after country. Thus, when the United Clothing Workers' Union was formed as a result of a Minority Movement-directed breakaway from the Tailors' and Garment Workers' Union, Congress adopted the following resolution :

"This Congress emphatically condemns the formation of breakaway unions under all circumstances, pledges itself to render all possible assistance to any affiliated union affected by a breakaway of its members, and directs the General Council to refuse to accept the affiliation of any breakaway membership."<sup>2</sup>

This resolution condemned all types of secessions ; since then, whether workers secede to form a separate union or to join another T.U.C. union, whether they are poached or act on their own initiative, their actions are automatically condemned by the General Council. Whenever a group of members seeks to transfer to another union, the transfer is not permitted if it is regarded as a move to secede.

The change in the T.U.C.'s policy between 1927 and 1929 was also due to another influence. Between 1924 and 1927, the T.U.C. conducted extensive discussions of ways to simplify the heterogeneous structure of, eliminate competition between, and develop a "closer unity" amongst T.U.C. affiliated unions. These discussions created "an ideological climate that reinforced economic and institutional pressures towards merger and

<sup>1</sup>Dual unionism is the existence of two or more rival unions with opposing policies and which cater for the same group of workers. Part of the opposition to breakaway unions is because their formation creates dual unionism. The Red International of Labour Unions was attempting to establish revolutionary unions in opposition to those unions which were affiliated to the International Federation of Trade Unions.

<sup>2</sup>T.U.C., *Annual Report* : 1929.



centralisation.”<sup>1</sup> To the extent that the T.U.C.’s interests were directed towards reducing the number of competing unions, to that extent they were directed towards narrowing the individual’s area of choice of union. In such a climate, the principle of freedom of choice tended to diminish in importance as compared with the development of friendly and orderly relations between unions.

The effect of all these influences was to blur the distinction between induced and spontaneous transfers. As will be shown in the following sections, from 1930 onwards, the Disputes Committee’s attention became directed towards whether a union had behaved “properly” and away from the right of workers to choose their union. Consequently, the concept of “poaching” was extended to include a wide range of “improper” union behaviour.

### III.

The principle expressed in the following statement had become part of the General Council’s policy long before it became codified in Clause (v) of the Bridlington resolutions of 1939 :

“Each union shall not commence organising activities at any establishment or undertaking in respect of any grade or grades of workers in which another union has the majority of workers employed *and* negotiates wages and conditions, unless by arrangement with that union.”  
(Italics added).

The Disputes Committee’s interpretation of it steadily undermined the principle of the right of workers to join the union of their choice.

Before the adoption of the anti-breakaway resolutions, even though Union ‘A’ had enrolled a majority of the workers employed in a grade, if Union ‘B’ had made no attempt to “poach” these workers, they could transfer from Union ‘A’ to Union ‘B’ in spite of Union ‘A’ ’s objections.<sup>2</sup> Then, in 1930,

<sup>1</sup>H. A. Turner, “Trade Union Organisation,” *The Political Quarterly*, Vol. XXVII, Number 1, Jan.-March, 1956.

<sup>2</sup>“National Amalgamated Union of Quarryworkers and Settmakers v. Workers’ Union,” T.U.C., *Annual Report* : 1925.

the Disputes Committee stated that—

“ . . . we are of opinion that (on grounds of general Trade Union policy) where a Union has established itself in a position of approximately 100 per cent. organisation, and is the only union negotiating on behalf of a given body of men, other unions should respect their position, and should not intervene to the detriment of Trade Union organisation.”<sup>1</sup>

This policy was interpreted to mean that as long as Union ‘A’ had enrolled a majority of the workers employed in a grade *and* held the negotiating rights, both voluntary transfers of members from ‘A’ to ‘B’ and spontaneous attempts to join Union ‘B’ by non-unionists employed in that grade could be prevented if Union ‘A’ objected.<sup>2</sup> Thus, the distinction between induced and spontaneous transfers became subordinated to the principle contained in Clause (v).

This principle raises the question of what is meant by a majority. If workers become dissatisfied with Union ‘A’ which has a majority membership, may they resign from that union and become non-unionists (assuming union membership is not a condition of employment), and join Union ‘B’ at a later date when Union ‘A’ has lost its majority? According to a precedent set by the Disputes Committee in 1946, any union which accepted members under these circumstances would be violating Clause (v). In 1942, the National Union of General and Municipal Workers had enrolled as members 98% of the workers in a plant, but lost this majority as a result of local difficulties. Between 1944 and 1945, when the N.U.G.M.W. allegedly had as members 40% of the workers, the Chemical Workers’ Union accepted some of the non-unionists, only to encounter the general union’s objections. The Disputes Committee, awarding in favour of the N.U.G.M.W., asserted :

“We cannot believe that the intention and full wording of Clause (v) can be interpreted as to give a Union the right of organisation in any establishment in which another Union has recently held the majority of

<sup>1</sup>“National Union of General and Municipal Workers v. Iron and Steel Trades Confederation,” *ibid* : 1930.

<sup>2</sup>“Iron and Steel Confederation v. Vehicle Builders,” *ibid* : 1934.

workers and responsibility of negotiation. *A literal interpretation of the single word 'majority' is in the circumstances of the present case, contrary to all established Trade Union practices, customs and relationships."*<sup>1</sup>

This post-war interpretation of Clause (v) signifies a return to a rejected formula. In 1938, the General Council sent a circular letter to affiliated unions<sup>2</sup> which asked each union to agree not to initiate recruitment in any establishment where it had no membership if another union catering for the same grades of workers had already succeeded in *securing* and *maintaining* membership. This formula was discarded in 1939 in favour of the "majority" principle because it was believed that the former policy might place a premium on non-unionism.

The General Council has never determined how long a period of time must elapse after one union has lost its majority, or indeed all its members in a grade, before it becomes permissible for another union to try to recruit the non-union workers in that grade. To-day it appears that as long as Union 'A' holds the negotiating rights in a firm and objects to Union 'B' 's recruiting workers employed in any grades in which Union 'A' *once* had the majority of members, Union 'B' may not accept these workers into its membership.<sup>3</sup>

If Union 'A' holds negotiating rights in a given territory while Union 'B' does not, Union 'B' may not recruit workers in that territory if Union 'A' objects.<sup>4</sup> Both by the watering down of the "majority" requirement in Clause (v) and through the spread of spheres of influence agreements between unions, a privileged position has been given to the union which first

<sup>1</sup>"National Union of General and Municipal Workers and Chemical Workers' Union," *ibid* : 1946. (italics added).

<sup>2</sup>T.U.C., *Inter-Union Competition*, 10th March, 1938.

<sup>3</sup>"National Union of General and Municipal Workers and Sign and Display Trades Union," *op. cit.* : 1957.

<sup>4</sup>"National Union of General and Municipal Workers and Amalgamated Union of Building Trades Workers," *ibid* : 1954.

secures some membership and negotiating rights.<sup>1 2</sup> Further, since most unions enjoy their major negotiating rights by virtue of their participation in either a joint industrial council or some other national negotiating body, and since the General Council has decided that it has no power to adjudicate cases in which a given union is excluded from such machinery by the unions which are parties to it,<sup>3</sup> Union 'A' is able to prevent Union 'B' from securing negotiating rights even if Union 'B' has secured some membership.

If Unions 'A' and 'B' both hold negotiating rights, have members in the same firm, have a security agreement in which membership of some (but not any specific) union is a condition of employment, and cater for the same group of workers, transfers between these unions may be prevented *even where there has been no violation of the Bridlington code*. In a precedent-setting award made in 1951, Union 'A' 's objection to relinquishing some of its members to Union 'B' was upheld on the ground that these workers were also in the "organisational sphere" of Union 'A', i.e., that Union 'A' also *catered* for these workers.<sup>4</sup>

#### IV

The General Council has always opposed transfers in cases where workers are in arrears in their contributions, but here, too, the terms of its policy have changed in a way which narrows

<sup>1</sup>In some instances, Union 'A', which holds the negotiating rights but has few members in a firm, may secure the employer's co-operation to prevent Union 'B' from either recruiting members or obtaining negotiating rights. An article in preparation by the writer and Mr. T. Lupton, will analyse the problems which arise when a union and management co-operate to oppose another union or the workers in a firm.

<sup>2</sup>Mr. J. D. M. Bell, in describing the principles adopted at Hull and Bridlington, confuses one of these principles with its post-war interpretation. He states, "Finally, no union should, without agreement, begin recruitment in any establishment among grades of workers of whom another union organised the majority or for whom it held negotiating rights." ("Trade Unions" in *System of Industrial Relations in Great Britain*, edited by Flanders and Clegg; Blackwell: 1956, p. 179, italics added). By substituting "or" for "and" in its interpretation of Clause (v), the Disputes Committee appreciably narrowed the area of choice available to workers.

<sup>3</sup>T.U.C., *Annual Report*: 1945, see, "Representation on Joint Negotiating Machinery."

<sup>4</sup>"Clerical and Administrative Workers' Union and Union of Shop, Distributive and Allied Workers," *ibid*: 1951.



individual rights. In the 1920's, arrears awards appear to have been based upon the principle that if Union 'B' accepted members who were in arrears with but not excluded from Union 'A', these workers would have to pay their back dues before they could be permitted to remain in Union 'B'.<sup>1</sup> By the late 1930's, awards reflected the principle that if Union 'B' accepted members who were in arrears with but not excluded from Union 'A', these members' contributions could not be accepted by Union 'B' and the members should be requested to return to Union 'A'.<sup>2</sup>

Most unions have a rule which excludes members who are in arrears for some stipulated period of time, usually six months. Where no such rule exists, the General Council has decided that a period of twenty-six weeks must pass before a person who is in arrears may be considered as an ex-member.<sup>3</sup> Until the war, workers who became ex-members because their membership lapsed due to excessive arrears were permitted to join another union in spite of objections by their first union.<sup>4</sup> Then the General Council decided that "although a union with such a rule regards an individual in such arrears as being no longer entitled to participate in the work of the union, it does not necessarily mean that the union regards such an individual as being automatically free to join another."<sup>5</sup> In short, although a worker may become an ex-member in the sense that he no longer belongs to a union, he is not a non-member in the sense that he is free to join another union. Awards of the past decade have established that Union 'B' may not accept such a person if Union 'A', of which he is not a member, objects to his joining any union other than 'A'.<sup>6</sup> The General Council has not established any time limit after which a union's claim to ex-members expires.

<sup>1</sup>"National Union of Clerks v. National Society of Operative Printers and Assistants," *op. cit.* : 1925. Also, "Amalgamated Engineering Union v. West of Scotland Brassturners," *op. cit.* : 1924.

<sup>2</sup>"National Union of Brushmakers and National Union of Distributive and Allied Workers," *ibid* : 1938.

<sup>3</sup>"Amalgamated Engineering Union v. United Patternmakers' Association," *ibid* : 1926. Also, "Miners' Federation of Great Britain and Amalgamated Engineering Union," *ibid* : 1934.

<sup>4</sup>*Loc. cit.* and *loc. cit.*

<sup>5</sup>T.U.C., "*Relationships Between Unions*" (a pamphlet), 1954 : pp. 3-4.

<sup>6</sup>Every post-war arrears case.

## V.

The General Council has always opposed transfers where the member concerned is under discipline and is, therefore, attempting to join another union to avoid disciplinary action.<sup>1</sup> This principle was reinterpreted in 1957 to mean that if a worker had been under discipline and had complied with the disciplinary action taken by his union, i.e., if he had suffered his penalty, he still could not transfer to another union as long as his union thought that there existed "an air of resentment."<sup>2</sup> The General Council has never defined this phrase, so it is not known whether it means that a worker who has once been under discipline resents his punishment (i.e., he is "browned off" because he has had to submit to disciplinary action), or that other union members resent this worker because he has once broken discipline. Also, there is no ruling as to how long a time must elapse before members who have been "punished" for their "crimes" may be permitted to transfer to another union. In the case in question, twelve months had elapsed between the time at which the persons concerned had paid for their breach of discipline and the time at which the Disputes Committee opposed the transfers; and so, as the award stands now, transfers may be prevented if the members concerned have ever been subjected to disciplinary action.

## VI.

The net result of the various changes in the T.U.C.'s principles for settling jurisdictional disputes, described above, has been that *not a single post-war award has permitted transfers*. Although a worker has in principle the right to shift his union affiliation, the exercise of this right has grown so circumscribed by institutional sanctions that in practice he has not been able to transfer *if his union objected*. The T.U.C.'s premise has become that a union's right to retain its members is supreme over the member's right to change his affiliation in all cases in which the two come in conflict. In its statements, the Disputes

<sup>1</sup>"National Society of Operative Printers and National Union of Clerks and Administrative Workers," *op. cit.*: 1936.

<sup>2</sup>"Union of Shop, Distributive and Allied Workers and National Union of Life Assurance Workers" (the Pontrefact case), *ibid*: 1956 and 1957. The award was made in 1957.

Committee has asserted that it would award against any union which maintained "unfair" objections to relinquishing its members; in its practices, however, the Committee has virtually sanctified a union's claim to retain its members.

One explanation for the post-war changes in awards can be found in the widespread wartime development of inter-union machinery for dealing with transfers and jurisdictional problems. Almost all of the inter-union difficulties which arose during the war were solved amicably by negotiations between existing unions; at this time, the Disputes Committee adjudicated very few cases. To a large extent, orderly relations have replaced the former competition between unions. Even where a number of unions organise in the same industry, gentlemen's agreements tend to iron out problems and parcel out organising areas. When a dispute arises, local or district officials may settle the problem; if they fail, the dispute may be solved at a conference of general secretaries or national officers.<sup>1</sup> As unions strengthened the habit of negotiating with each other during the war,<sup>2</sup> the jurisdictional decisions made by their officials tended to infringe the right of workers to shift their union affiliation; and this tendency is reflected in the Disputes Committee's post-war awards. The T.U.C., composed of autonomous unions, can decide matters only in accordance with the decisions of its constituents. Thus, the Disputes Committee's awards necessarily follow the pattern set by affiliated unions and bring into line with this pattern those unions which deviate from the accepted practices.

Another reason for the changes in post-war awards can be found in the relative influence of various unions in industry. Most awards tend to benefit the big unions; these are the ones which have the greatest areas of organising rights and which are able to grow by recruiting more *intensively* in those places where they have established these rights. Consequently, they

<sup>1</sup>In some cases, these decisions are negotiated through a more formal machinery than is described above. For example, the Transport and General Workers' Union and the National Union of General and Municipal Workers have a standing joint committee for dealing with inter-union problems.

<sup>2</sup>For a general study of the effect of wartime policy and administration on labour, see, H. M. D. Parker, *Manpower*; H.M.S.O. and Longmans, Green and Co., London: 1957.

have little need to infringe the jurisdictional claims of other unions. In practice, however, they frequently behave as though they are not interested in further expansion; few of them have carried out any important, large-scale organising drive in the past ten years, but instead, they appear to be content with the *status-quo*.<sup>1, 2</sup> The absence of inter-union competition appears to lead to sloth. But even large unions must prevent losses in membership to preserve the *status-quo*; and, therefore, the major unions have developed a vested interest in procedures which hinder inter-union mobility. And since these unions negotiate for the largest number of organised workers and have the greatest areas of organising rights, their procedures set the pattern which is reflected in the Disputes Committee's awards.

The fact that large unions generally win jurisdictional cases is not *directly* attributable to any undue influence of big unions in the disputes procedure. No member of the General Council may sit on the Disputes Committee in cases where his union is a party to the dispute. Of course, this policy does not prevent representatives of big unions from adjudicating cases in which a large union other than their own is a party to the dispute. Also, the largest unions have a considerable influence on the General Council even though the method of electing General Council members prevents these unions from having as much influence as the size of their membership might warrant.<sup>3</sup> Lastly, the six largest unions have the majority of the votes in the T.U.C. because each union has as many votes as it has members.<sup>4</sup> Therefore, the influence of the big unions in

<sup>1</sup>The National Union of Public Employees is an exception to the above statement if we include the N.U.P.E. among the big unions.

<sup>2</sup>Messrs. B. McCormick and H. A. Turner suggest that the lack of interest in expansion may be partly attributed to the elaborate system of state-supported minimum wage regulation which wards off any threat to established standards from the unorganised areas of the labour market. See, "The Legal Minimum Wage, Employers and Trade Unions: An Experiment," *The Manchester School*, Vol. XXV, No. 3, Sept., 1957.

<sup>3</sup>For a discussion of the method of electing General Council members, see, B. C. Roberts, *Trade Union Government and Administration in Great Britain*; G. Bell and Sons, Ltd.: 1956.

<sup>4</sup>In 1956, there were 186 unions affiliated to the T.U.C. representing 8,263,741 members. The six largest unions had a total of 4,325,392 members or over half the T.U.C. membership.



Congress may indirectly contribute to the fact that they usually win awards.

Most cases which reach the General Council involve disputes in which a small union is the "guilty" party. Small unions generally are adversely affected by awards precisely because they do not have the number of members nor the area of negotiating and organising rights that the large unions have. When a small union expands, it usually has to recruit *extensively* and so quickly infringes the jurisdictional claims of other unions. The National Union of Public Employees has grown from a small to a relatively large union by ingeniously recruiting in areas which were incompletely divided up and by cleverly wiggling through loop holes in the established practices—but this is an exceptional case. The procedures which hinder inter-union mobility tend to hinder small unions from expanding ;<sup>1</sup> but since these unions have a minority of members in industry and a minority of the votes in Congress, they have not been able to alter the direction of post-war awards.

## VII.

In conclusion, we may note a paradox suggested by some current problems of union organisation : the customs developed to avoid competition between unions are themselves creating difficulties which are harmful to the relationship between the worker and his union. Where union membership is not a condition of employment, workers, frustrated in their attempt to transfer to the union of their choice, may exercise their prerogative of becoming non-unionists. In the previously cited "National Union of General and Municipal Workers and Chemical Workers' Union" (1946), for example, the majority of workers expressed their disapproval of the general union by becoming non-unionists. The General Council indirectly fostered non-unionism when it prevented these workers from joining the Chemical Workers' Union.

The prevention of transfers may also contribute to apathy amongst members. In *Union of Shop, Distributive and Allied Workers and Clerical Workers' Union* (1951), a case in which both unions held negotiating rights in a firm where membership

<sup>1</sup>These procedures also tend to prevent the development of new unions.

of some union was a condition of employment, U.S.D.A.W. admitted that the clerks who desired transfers had no clerical representatives on their branch executive committee, because they had never bothered to nominate anyone. Yet, these same apathetic clerks expressed a desire to transfer to the clerical union on the ground that they had little in common with the distributive workers who were in a majority in their branch. It is not unreasonable to expect that had these transfers been granted, these clerks might not have been so disinterested in union affairs, since they were anxious to join a union whose members held the same jobs and interests as themselves. Then U.S.D.A.W. would have lost some members ; C.A.W.U. would have gained by the same amount ; and while the labour movement would have been numerically neither better nor worse off, there would have been at least the possibility of a net gain in the activation of a group of members.

To ignore the wishes of members in awards may give birth to dissident groups, who can not be relied upon to loyally carry out the policy of the union approved by the Disputes Committee, and who are constantly in a state of revolt. Perhaps what is fast becoming a classic of this dramatic type of union disorganisation is the case of the northern dockers. Told by the General Council that they may not belong to the National Amalgamated Stevedores' and Dockers' Society, many dockers hold dual membership both in N.A.S.D.S. and in the Transport and General Workers' Union. They have struck in support of the former against the orders of the latter, the union approved by the T.U.C.

Disregard of the wishes of members in making awards has also led to legal action against unions. When the Disputes Committee orders a union to retransfer members who are "wrongly" recruited, and these members refuse to return to their previous union, they must be expelled. Prior to 1957, few unions, if any, had rules which specifically permitted them to expel a member in compliance with an award ; and therefore, those members who had no wish to be retransferred were able to take legal action against their union for unlawful expulsion. As a result of a series of such legal cases to prevent the General

Council from implementing its awards,<sup>1</sup> the Council requested all affiliated unions to incorporate in their rules a rule which would enable a union's Executive Council to exclude a member if required to do so by an award.<sup>2</sup> In this way, the General Council is closing an avenue of protest available to members in order to solve one of the problems created by awards which ignore the wishes of members. While this "solution" will prevent members from securing legal assistance, it also may increase the extent to which the other avenues of protest still available to them are used.

The Disputes Committee was set up to build order and stability in inter-union relations for the benefit of the union movement. Its awards have restrained unions from "raiding" each other's organisations and have considerably reduced inter-union rivalry and duplication of organising efforts. But the Disputes Committee has relied on principles which reflect the standards and customs employed by unions in their private inter-union agreements. Since the major unions have a vested interest in keeping their members, the principles they developed were designed to hinder inter-union mobility, and therefore, to eliminate the principle of the right of workers to join the union of their choice. Thus, the Disputes Committee's awards have

<sup>1</sup>*Andrew v. National Union of Public Employees*, 1955. And *Spring v. National Amalgamated Stevedores' and Dockers' Society*, 1956.

<sup>2</sup>T.U.C., *Annual Report*: 1957. With respect to this request, Mr. Grunfeld comments:

"It is arguable that adoption of the rule would leave the individual member powerless, so far as the law is concerned, to resist the expulsion with a view to re-transfer, however strong his dissatisfaction with the complaining union might be. This, however, is a superficial argument against adoption of the rule once it is recalled that the Bridlington Agreement, provided it is fairly observed, disapproves only of wrongful recruitment. A dissatisfied member is always free to pay up his arrears, resign and join any other available union, or indeed go out with a breakaway union—unless, that is, his freedom is restricted by a union security agreement, or, at least, by what may for convenience be termed a mono-security agreement." (*Trade Unions and the Individual*: p. 30).

The argument against the adoption of the rule may not be as superficial as Mr. Grunfeld suggests, once it is recalled that the Disputes Committee's interpretation of the Bridlington resolutions has prevented transfers in every post-war case in which a union has objected to such transfers. Further, the term, "wrongful recruitment" like the term, "poaching" has come to mean any recruitment which violates the ethical code as interpreted by the Disputes Committee. These words have lost their significance to-day.

grown rigid and bureaucratic in that they ignore the rights of the members involved in the disputes.

While disputes are settled by people at the top of the union hierarchy, by officials or by the Disputes Committee, the effects of these settlements can be seen at the bottom of the hierarchy when lay members become dissatisfied with awards. Many workers still believe in the principle of freedom of choice and are unwilling to have their exercise of this right sacrificed to the ideal of orderly inter-union relations;<sup>1</sup> as a result, some members become non-unionists or apathetic while others revolt against their union. The prevalence of these problems which harm the trade union movement raises the question whether it is possible to establish orderly inter-union relations without violating the rights of members to join the union of their choice. If not, it is still arguable that the trade union movement has gone too far in pursuit of the goal of orderly inter-union relations, and that more freedom of competition between unions would restrain bureaucracy and act as a healthy stimulus to recruitment.

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<sup>1</sup>Many writers in industrial relations implicitly assume that the whittling away of a worker's right to join the union of his choice is not an important sacrifice to orderly inter-union relations. A few writers have made this assumption explicit. For example, Mr. H. A. Turner asserts that "in the world of labour, freedom is less involved in individual choices (which are few by circumstances) than in group standards and status—with the preservation of which random transfers of allegiance are incompatible" ("Trade Union Organisation," *Political Quarterly*; Jan.-March, 1956). Mr. B. C. Roberts claims, "The principles embodied in the Bridlington Agreement may be defended as good trade union practice; and most trade unionists would agree that in the interests of sound trade unionism this element of regulation should be introduced despite the freedom surrendered." (*Trade Union Government and Administration in Great Britain*: p. 52).

The claim that most trade unionists agree with (or even know about) the Bridlington Agreement can not be inferred from the fact that most unions support it. We do not know what the majority of the over-eight-million T.U.C. members think about these regulations, as they have never been asked.



# A Comment on Dr. Zelder's Estimates

In his article in a recent issue of this Journal <sup>1</sup> Dr. Zelder presents estimates of 'devaluation' elasticities of demand for British and American exports of 37 commodities. The estimates are based upon time series of the inter-war period. Elasticities of substitution between British and American exports of each of the commodities are first estimated. 'Devaluation' elasticities of demand for each country's exports of each commodity are obtained by adjusting these to take account of that country's share of world exports of the commodity.

In the course of presenting his work, Dr. Zelder seems to have fallen into actual error on one point and to have insufficiently elucidated a number of others :

1. Dr. Zelder's "primary interest . . . is to evaluate the effectiveness of devaluation," (p. 39) and his procedure for converting elasticities of substitution to those of demand is most applicable to the 'devaluation' case (p. 45). He, therefore, poses the question of whether his original estimates of elasticities of substitution are applicable to the 'devaluation' or to the 'non-devaluation' case. The 'devaluation' case is defined as that in which the prices of all of a country's exports change in the same proportion (pp. 39, 45). In the 'non-devaluation' case, the price of the export in question varies, all other prices remaining unchanged.

Elasticities of substitution would normally <sup>2</sup> be higher (in absolute value) in the second case, because when the price ( $P_{1c}$ ) of  $c$  exported by country 1, say, falls, all other prices remaining unchanged, there will be substitution in favour of that export, not only at the expense of identical and substitute commodities exported by country 2, but also at the expense of substitute exports of country 1. In the case of 'devaluation',

<sup>1</sup>Raymond E. Zelder, "Estimates of elasticities of demand for exports of the United Kingdom and the United States, 1921-1938" *this Journal*, Vol. XXVI, No. 2, (January, 1958), pp. 33-47.

<sup>2</sup>i.e. whenever a country's various exports are predominantly substitutes rather than complements.

all export prices of country 1 ( $P_{1x}$ ) change in the same proportion. Consequently all of the third substitution effect (and possibly some of the other two) is lost.

In principle, this seems a most useful distinction to observe. It would appear, however, firstly, that the assumptions of Dr. Zelder's estimating procedure preclude the possibility of any divergence between 'devaluation' and 'non-devaluation' elasticities of substitution, and, secondly, that the test which he proposes to ascertain which sort of elasticities he has, in fact, estimated is not particularly appropriate for the purpose.

In order that Dr. Zelder's estimating equation (5) should provide efficient and unbiased estimates of elasticities of substitution, the cross-elasticities of demand for the two countries' exports of the same good and the income elasticities of the demand for them must be equal (p. 38). But, if cross-elasticities of demand with respect to all other prices are equal, then any substitution in favour of all other exports of country 1 in the 'devaluation' case must change the quantities of the good sold by the two countries by the same fraction. The ratio of the two quantities (say  $q_1/q_2$ ), which is all that matters, thus remains unchanged. Hence, on these assumptions, there can be no difference between the 'devaluation' and the 'non-devaluation' elasticity of substitution.

It would seem, then, that the question of whether Dr. Zelder's estimates are more nearly those of 'devaluation' or of 'non-devaluation' elasticities (p. 39) can only arise if his assumption of equal cross-elasticities is not fulfilled. In those circumstances, the estimating procedure is certainly inefficient and possibly biased, whichever sort of elasticities one wants to estimate; but it might yield results which, apart from the bias, if any, are closer to one sort than to the other. It will be remembered that in order to demonstrate that he has been dealing with the 'devaluation' case Zelder needs to show that prices of all of each country's exports have been moving proportionately over time. As a statistical counterpart of this, he wishes to demonstrate that: "(1)  $P_{1x}$  is highly and positively correlated with  $P_{1c}$ , (2)  $P_{2x}$  is highly and positively correlated with  $P_{2c}$ ," . . . (p. 39). As a "rough empirical test" of these

two propositions, Zelder correlates the price ratios of exports of commodity  $c$  ( $\frac{P_{2c}}{P_{1c}}$ ) with price ratios of some similar export, say  $k$ , ( $\frac{P_{1k}}{P_{2k}}$ ). (Table 2). He alleges that: "High, positive correlations between such price ratios are evidence that changes in the prices of similar exports of the United States are substantially proportional to each other . . ." and similarly for the U.K. (p. 39).

Now, it is by no means obvious that this test does furnish evidence of this sort. To see that, one need only remember that two series of fractions can be highly and positively correlated (or, for that matter, identical) without either their numerators or their denominators being similarly correlated. A more convincing test, which was available to Dr. Zelder, would have been to correlate separately British prices of similar exports and American ones.

As a matter of fact, it seems rather doubtful to assume that prices of British exports all moved together in between the wars: certainly, the indices of unit values of commodity groups published by the Board of Trade show considerable divergences. This is true even for year to year movements of unit values of such closely related manufactured commodity groups as: Iron, steel and their manufactures, non-ferrous metals and their manufactures, and cutlery and hardware; machinery and vehicles; and cotton yarns and manufactures and woollen and worsted yarns and manufactures.<sup>1</sup>

The accompanying table shows the year to year percentage changes in the unit values of the above groups for the years 1924-38. The indices have been adjusted for fluctuations in the dollar-sterling exchange rate so that they reflect 'prices' expressed in dollars rather than pounds. It will be seen that the movements of unit values of any closely related pairs that can be formed have quite often shown sizeable divergences in magnitude, and not infrequently divergences in direction also.

<sup>1</sup>These are about as close as one can get to Dr. Zelder's comparisons using the published data.

PERCENTAGE CHANGES IN DOLLAR UNIT VALUES OF RELATED BRITISH  
COMMODITY GROUPS FROM PREVIOUS YEAR 1925-1938

Year	Exchange Rate U.S. cents = £1 1924 = 100	Iron and Steel and mfs.	Non- ferrous metals and mfs.	Cutlery hardware, etc.	Machinery	Vehicles	Cotton yarns and mfs.	Woollen yarns and mfs.
1925 ...	109.3	1.6	11.3	13.5	6.9	- 0.6	6.9	16.0
1926 ...	110.0	- 3.9	3.5	- 1.1	1.4	- 4.1	-11.5	- 4.1
1927 ...	110.0	- 4.6	- 2.4	- 6.8	0.3	- 1.6	-11.5	- 2.0
1928 ...	110.2	- 5.7	- 9.3	- 5.6	- 2.2	1.0	4.5	3.1
1929 ...	110.2	- 0.6	1.4	- 3.0	1.7	- 4.3	- 3.0	- 0.7
1930 ...	110.2	0.7	-17.4	- 5.2	1.9	- 0.1	- 8.6	- 7.3
1931 ...	102.7	-12.6	-20.4	-10.9	- 4.8	-14.5	-24.2	-20.0
1932 ...	79.3	-27.0	-23.4	-31.6	-26.3	-33.0	-29.3	-29.6
1933 ...	96.4	23.9	29.6	21.8	26.6	12.9	20.0	13.4
1934 ...	114.0	21.0	30.1	7.1	14.8	14.5	19.6	25.9
1935 ...	111.5	- 4.2	- 8.3	- 5.1	- 0.2	0.9	- 1.2	- 4.6
1936 ...	112.7	4.0	2.0	1.9	3.8	- 4.0	3.6	4.8
1937 ...	111.9	14.4	- 1.2	1.4	5.8	5.2	8.8	12.2
1938 ...	110.6	9.8	-12.5	2.8	7.8	5.7	- 3.0	- 3.6

Sources : Exchange rates : League of Nations, *Review of World Trade*, monthly averages weighted by value of exports. Indices : *Board of Trade Journal*, put on common 1924 presentation base and converted to indices of dollar unit values by multiplying by column 1.

It is also noticeable, however, that large movements in the dollar 'prices' of British exports tend to accompany large changes in the exchange rate. Moreover, each of these large movements is in the same direction for all of the seven groups and for most of them the change is of a comparable order of magnitude.<sup>1</sup> It is extremely likely that large changes in the ratios of prices charged for identical commodities by U.S. and

<sup>1</sup>The 'price' movements accompanying the nine per cent. appreciation of the pound between 1924 and 1925 constitute the one exception in these respects.



U.K. exporters were even more highly concentrated in periods when the rate of exchange moved considerably. It may well be, therefore, that Dr. Zelder's estimates relate principally to devaluation elasticities in this rather different and far less abstract sense. Moreover, since one can also argue that the large changes were in the same proportion for closely related groups (although only very roughly so) these estimates may relate to 'devaluation' elasticities as defined by Zelder also. But this argument is weakened by the fact that quite large changes occur in the unit values of individual commodity groups at times other than those at which the exchange rate changes. A conclusive answer to Dr. Zelder's question can, of course, be obtained only from his own data.

2. Dr. Zelder's numerical results for demand elasticities (Table 3) are derived from values of the elasticities of substitution intermediate between those obtained by regressions of price ratios on quantity ratios and those obtained by regressions of quantity ratios on price ratios. The particular intermediate values which he takes are the geometric means, equal to ratios of coefficients of variations of the two variables (p. 35).

Now, clearly some sort of intermediate estimate may be appropriate; but, since the two estimates of substitution elasticities often show sizeable divergence, the numerical results may well be influenced by the sort of intermediate estimate used.

It is well known that: "If deviations [i.e. random disturbances of the true values] appear in both variables but are uncorrelated, then the true relation corresponds to a line lying in the acute angle between the elementary regression lines. A more exact location can only be obtained from knowledge of the relative magnitude of deviations of the two variables."<sup>1</sup>

Dr. Zelder's treatment of the two direct estimates as limits, therefore, assumes that any errors in his price and quantity relatives are uncorrelated random disturbances. His acceptance of the geometric mean as the appropriate intermediate estimate seems to be equivalent to taking the diagonal regression between the two variables as the best estimate of their relationship.<sup>2</sup>

<sup>1</sup>R. G. D. Allen, "The Assumptions of linear regression," *Economica*, N. S., Vol. VI, No. 22 (May, 1939) p. 199.

<sup>2</sup>This was pointed out to me by Messrs. J. A. C. Brown and G. R. Fisher, who have also helped me with all of this section.

This is so if the two sets of errors have zero means and equal variances. It is this last assumption of equal variances of the two sets of errors that gives rise to serious doubt.<sup>1</sup> Dr. Zelder presents no argument as to why he thinks that the assumptions required to make the diagonal regression the nearest estimate of the true relation between his variables are fulfilled. Nor does he say whether he literally believes that the geometric mean is the best intermediate estimate available, or merely that it is likely to be as good as any other and easier to obtain than some.

On other points also, Dr. Zelder has perhaps been a little too concerned not to burden his reader with technical explanations: Since, unlike Professor Harberger,<sup>2</sup> Dr. Zelder does seem to wish to have his results apply to a population larger than the sample, it is a pity that he did not publish the standard errors of his regression coefficients. It would have been interesting to know how far beyond the "central tendency limits" (p. 34) sample values of elasticities might be frequently (or occasionally) expected to stray. Moreover, these statistics would throw further light on the reliability of the estimates. And, finally, some further explanation of the procedure followed would have been most helpful in interpreting Dr. Zelder's results: How, in briefest outline, were the price series derived from the actual data given in the sources mentioned in Appendix B? Why were the shares of the U.S. and the U.K. in world markets in 1937, a year nearly at end of Dr. Zelder's period, thought most appropriate to apply to all of it? Did these shares vary significantly over the period? If so, Dr. Zelder's initial assumption of constant elasticities of substitution would seem to be incompatible with the derivation of a *single* set of price elasticities of demand. And how serious a distortion of reality is it to assume (as is evidently done in Dr. Zelder's Table 3) that a country's share of the world market for a broad commodity group is equally applicable to all the individual commodities in that group?

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<sup>1</sup>Cf. Richard Stone, *The Measurement of Consumers' Expenditure and Behaviour in the United Kingdom, 1920-1938*, Vol. I, pp. 296-301.

<sup>2</sup>A. C. Harberger, "A Structural Approach to the Problem of Import Demand," *American Economic Review*, Vol. XLIII, No. 2 (Papers and Proceedings, May, 1953) p. 153.

# The Gains from Freer Trade with Europe: An Estimate

Aside from possible effects in stimulating competition and the spirit of enterprise, which are difficult to define, let alone measure, the main gains to be expected from freer trade between the United Kingdom and other European countries are those arising from its effects in increasing the income-producing efficiency of the country's resources. Such increases may accrue in three ways: through economies of scale in production made possible by enlargement of the market; through economies of specialization and division of labour resulting from freer trade; and through better terms of trade with the outside world. Of these, the first is unlikely to be very important for this country given the size of the market to which British industry already has access, and is in any case difficult to quantify. The third is unlikely to be significant for a Free Trade Area confined to manufactures, since Britain's dependence on imported food and materials would not be much reduced and a small reduction in her exports of manufactures to non-member countries would not have much effect in permitting higher prices. The substantial source of gain for the United Kingdom is therefore likely to be in the second direction, specialization and division of labour.

A rough idea of the magnitude of the gain from participation (or loss from non-participation) in the Common Market due to this cause can be derived from figures contained in the Economist Intelligence Unit's study, *Britain and Europe*.<sup>1</sup> This volume gives estimates of the values of trade between this country and Europe in 1970 in the presence and the absence of a Free Trade Area, for eight major industries. These industries produced 55% of the net value of British manufacturing output in 1950. In addition, estimates of trade quantities are given for another five major manufactured products, accounting for something under 18.5% of net value of manufacturing output in 1950; these quantities can be translated into trade values by assuming

<sup>1</sup>The Economist Intelligence Unit Limited, *Britain and Europe*, London, 1957.

an appropriate unit value, though the result is obviously less satisfactory than the figures for the other eight industries.<sup>1</sup> Together, these thirteen industries accounted for about 50% of U.K. exports to, and 25% of imports from the Continent in 1955.

From the estimates of trade values in 1970 on the two alternative assumptions, the effects of the Free Trade Area in increasing trade with Europe above what it would be if only the Common Market is established, can be estimated (see *Table I column 4, and Table II column 2*).<sup>2</sup> The increase in the values of trade with the continent so derived do not, however, measure the gains that would result from the Free Trade Area, since exports use resources which could be devoted to other purposes, and imports must be paid for by exports. To obtain such measurements, it is necessary to begin by defining more precisely the nature of the economies of specialization permitted by freer trade.

On the export side, the gain arises from the opportunity to sell the products of the country's resources on better terms than would be possible otherwise, and could be measured by the loss of income that would result if the productive factors employed in meeting the additional demand created by the Free Trade Area had to be diverted to producing for the domestic or other foreign markets. Unfortunately this loss is not estimable on the available information—it is arguable that it would not be great, since manufactures are fairly close substitutes on world markets. But it is possible to fix a maximum for the loss, since at the very worst the prices of the products concerned could be lowered enough to overcome the disadvantage of the Common Market tariff and permit their disposal in Europe.

<sup>1</sup>The unit values used below were derived as rough approximations from data contained in the industry chapters of *Britain and Europe*; they are stated in notes to the Tables, for the convenience of readers interested in re-calculating the estimates on other assumptions.

<sup>2</sup>The figures are not altogether satisfactory for the present purpose, since they include the effect of the assumption made by the Economist Intelligence Unit that the Free Trade Area will mean a greater increase (45% as against 41%) in G.N.P. by 1970 than would otherwise occur. This tends to make the following calculations produce an over-estimate of the gain from Free Trade.



This consideration actually leads to two estimates, according to what is assumed about the nature of the market and the price reductions necessary to offset the tariff. If the prices of all exports to Europe had to be reduced to the same extent, the maximum-loss estimate would be the value of exports to Europe under a Free Trade Area, multiplied by the proportion in the final price of the Common Market tariff rate which had to be offset.<sup>1</sup> This estimate, however, would be unrealistically large, since prices of some products, or to some markets, could be maintained while others were lowered. At the opposite extreme, price reductions might be confined to the minimum necessary to promote the particular transactions which would not take place in the absence of a Free Trade Area. In this case, the maximum-loss estimate would be (approximately) the value of the difference in exports to Europe due to the Free Trade Area, multiplied by half the proportion of the relevant tariff rate in the final price (since the price reductions required would have to offset the full weight of the tariff only in extreme cases). Either estimate requires an assumption about the level of the Common Market tariffs, which in most cases can only be a reasoned approximation. The rates assumed,<sup>2</sup> and the two alternative estimates to which they lead, are presented in Table I. On the first assumption, the maximum possible total loss on the industries represented would be of the order of £192 millions per year, while on the second, it would be only of the order of £62 millions per year. It should be stressed that these are maximum estimates, which assume that the goods concerned are useless outside the Continental market.

The theory underlying this calculation can be illustrated by reference to Figure 1. In the Figure, *SS* is the export supply curve of the products of a particular industry, measured in pounds' worth of domestic resources; *DD* is the European demand curve. With a tariff of *SS'* the quantity exported is *OX*<sub>1</sub>, with free trade it is *OX*<sub>2</sub>. What has to be done to export *OX*<sub>2</sub> in spite of the tariff depends on the nature of the industry's products. If these are perfect substitutes, the prices of all will

<sup>1</sup>This proportion is related to the tariff rate by the formula  $p = t/1-t$ , where  $p$  is the proportion and 100% is the *ad valorem* rate of duty on imports.

<sup>2</sup>Rough averages based on data in *Britain and Europe*.

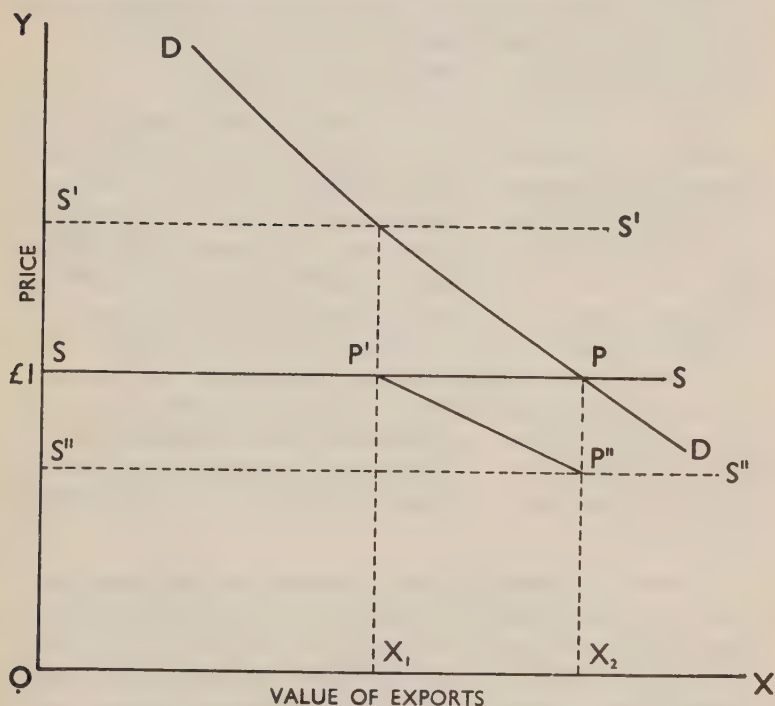
**TABLE I**  
ESTIMATED MAXIMUM GAIN ON EXPORTS FROM F.T.A.

Industry	Assumed C.M. Tariff Rate (%)	Total Exports to F.T.A. 1970		Additional Exports under F.T.A. as Against C.M. 1970	
		Value (£m)	Maximum Loss Estimate (£m)	Value (£m)	Maximum Loss Estimate (£m)
Iron and Steel ... ..	10	70	6.4	25	1.1
Non-ferrous metals ... ..	10	40	3.6	15	0.7
Metal manufactures ... ..	17½	38	5.7	27	2.0
General engineering ... ..	17½	280	41.7	120	8.9
Electrical engineering ... ..	17½	225	33.5	132	9.8
Chemicals ... ..	17½	125	18.6	88	6.6
Hosiery ... ..	20	20	3.3	15	1.2
Clothing ... ..	20	24	4.0	20	1.7
Passenger cars ... ..	30	187	43.2	149	17.2
Commercial vehicles ... ..	30	70	16.1	58	6.7
Cotton fabrics ... ..	17	17	2.5	13	0.9
Wool fabrics ... ..	17	50	7.2	31	2.3
Man-made fibre fabrics ... ..	20	38	6.3	34	2.8
Totals ... ..		1,184	192.1	727	61.9

Assumed unit values : passenger and commercial vehicles £600 ;  
cotton fabrics 12s. per lb. ; wool fabrics 25s. per lb. ;  
man-made fibre fabrics 15s. per yd.

have to be reduced until the new price plus the tariff is equal to  $OS$  : the supply curve becomes  $S''S''$  and the loss incurred in selling  $OX_2$  is  $SS''P''P = SOX_2P \cdot SS''/OS$ , i.e. the total value of free trade exports multiplied by the proportion of the tariff in the final price. If the demand for each successive pound's worth of output is separate and independent, either because discrimination between buyers is possible or because

the products are distinct, only the prices of the marginal exports will have to be reduced : the supply curve becomes  $SP'P''$  and the loss incurred is  $P'PP''$ , which is approximately equal to  $\frac{1}{2}P'P \cdot SS'' = \frac{1}{2}P'X_1X_2P \cdot SS''/OS$ , i.e. half the value of the increase in exports under free trade, multiplied by the proportion of the tariff in the final price.



**Fig. I**

On the import side, the gain from freer trade arises from the opportunity provided to consume imported goods in place of more expensive domestically—produced goods to which the purchaser has previously been directed by the tariff. This gain can be measured by the additional tariff revenue the Government could have collected if it had reduced the tariff on each individual item of the additional imports resulting from Free Trade just sufficiently to induce the purchaser to buy it

(whether the tariff reduction is assumed to apply to the previous volume of imports doesn't matter, since this merely affects the distribution of income between purchasers of goods and the Government). It will be approximately equal to the change in the value of imports from the Free Trade Area, multiplied by half the tariff rate previously levied. Estimates of the gains from this source based on the E.I.U. figures and assumed tariff rates are presented in the left half of Table II; the total is of the order of £28 millions per year.

In addition to the gains from greater imports from Europe, however, it is necessary to take into account the fact that elimination of tariffs on trade with Europe will affect the value of trade with the rest of the world and so alter the amount of tariff revenue collected on that trade. Estimates of the difference that a Free Trade Area as against a Common Market only would make to British imports from outside Europe can be derived from the E.I.U. study and are presented in the right half of Table II, together with the value of the difference on the assumed tariff rates. The resulting figure, a gain of £3.5 million per year, is admittedly rather suspect, and is largely attributable to the study's assumption that Gross National Product will be higher in 1970 with a Free Trade Area than without one.

The theory underlying the calculation on the import side is illustrated in Figure 2, where  $SS$  is the European supply curve of imports, measured in pounds' worth,  $S'S'$  is that supply curve including the British tariff, and  $DD$  is the British demand curve. Elimination of the tariff increases imports from Europe from  $OM_1$  to  $OM_2$ , resulting in a transfer from tariff revenue to consumers' surplus of  $SS'P'P''$  and an increase in consumers' surplus (which could have been captured by discriminatory lowering of tariffs on marginal imports) of  $P'P''P$ , approximately equal to  $\frac{1}{2} P'P'' \cdot P''P = \frac{1}{2} P''M_1M_2P \cdot S'S/OS$ , i.e. half the value of the increase in imports multiplied by the tariff rate. To finance the extra imports, however, expenditure elsewhere has to be reduced by  $P''M_1M_2P$ , of which some part, say  $P''QQ'P$ , represents a reduction in government tax revenue. If it is expenditure on



**TABLE II**  
ESTIMATED GAIN ON IMPORTS FROM F.T.A.

Industry	Assumed British Tariff Rate (%)	Additional Imports from F.T.A., 1970		Additional Imports from Other Countries, 1970		Total Gain or Loss
		Value (£m)	Estimated Gain (£m)	Value (£m)	Estimated Gain (+) or Loss (-) (£m)	
Iron and Steel ...	10	35	1.8	-21	-2.1	-0.3
Non-ferrous metals ...	15	20	1.5	+30	+4.5	+6.0
Metal manufactures ...	20	12	1.2	- 2	-0.4	+0.8
General engineering ...	17½	22	1.9	+ 3	+0.5	+2.4
Electrical engineering ...	17½	100	8.8	0	0.0	+8.8
Chemicals ...	17½	24	2.1	-12	-2.1	0.0
Woolenry ...	20	9	.9	+ 2	+0.4	+1.3
Clothing ...	20	7	.7	+ 1	+0.2	+0.9
Passenger cars ...	30	32	4.8	0	0.0	+4.8
Commercial vehicles ...	30	1	0.2	0	0.0	+0.2
Cotton fabrics ...	17½	10	0.9	+ 6	+1.0	+1.8
Wool fabrics ...	17½	5	0.5	+ 1	+0.2	+0.7
Man-made fibre fabrics...	22½+11d. per lb.	12	2.5	+ 3	+1.3	+3.8
Totals ...		290	27.7	+11	+3.5	+31.2

Assumed unit values : passenger and commercial vehicles £600 ;  
cotton fabrics 10s. per lb. from F.T.A., 5s. per lb. from rest ;  
wool fabrics 15s. per lb. ; man-made fibre fabrics 3s. per yd. and 5 oz.  
per yd.

home-produced goods which is reduced, the re-absorption of the  $QM_1M_2Q'$  worth of resources in export production will generate new tax revenue which may be expected to replace the loss ; but if it is expenditure on imports from non-European sources which is reduced, the loss of tariff revenue is not made good and must be deducted from the increase in consumers'

surplus. Conversely, if imports from non-European countries are complementary with imports from (or exports to) Europe and so increase, the country benefits from the associated increase in tariff revenue. The loss (gain) is measured by the increase (decrease) in the value of imports, multiplied by the applicable tariff rate.

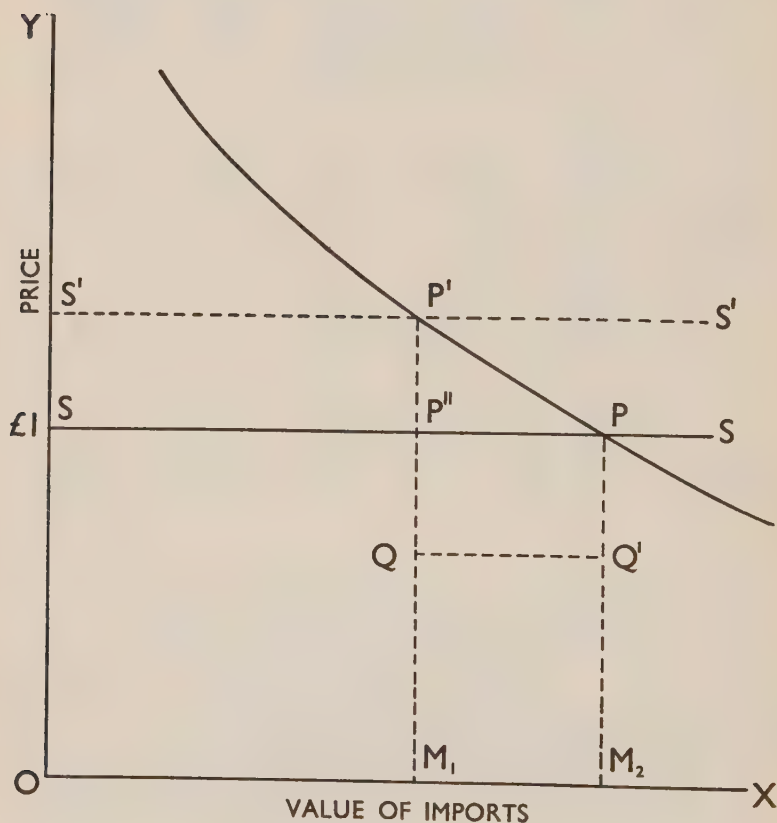


Fig. 2

Putting the two sides of the picture together, we arrive at a maximum possible gain on the export side of £62·192 millions per year, and a gain on the import side of £31 millions

a year, for the industries represented. These figures suggest orders of magnitude for the economy as a whole of, say, £125-400 millions as the maximum gain on the export side, and £100 millions as the gain on the import side (bearing in mind that these industries are more important in exports than in imports). If the minimum figure for the maximum export gain is taken as a (probably excessive) approximation to the likely gain on that side, this would imply a total gain of the order of £225 millions—a difference of about 1% on what the Economist Intelligence Unit estimates the Gross National Product is likely to be in 1970. This figure is very rough—more of a “guesstimate” than an estimate—but because of the way it is arrived at the order of magnitude is unlikely to be altered much by quite substantial changes in the assumed unit values or tariff rates on which it is based.

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